COMPUTERWORLD

FOCUS

The triumph of integration

Profile of DEC

Unix: A user's market

Groupware's promise

Special Section:

Systems integrators

Will it increase departmental clout?

VMCENTER II
Smart Economics.

in focus

DEC CLOSES IN Through revitalized sales efforts, a technology platform intended to grow with the user and third-party software agreements, Digital Equipment hopes to tighten its grip on IBM and its other competitors. Will the company succeed in the face of the mid-range push by IBM and networking advances by companies like Sun? Our reporter talks to DEC insiders and users who say the firm has its work cut out for it. By Helen Pike. *Page 12.*

A USER'S MARKET Unix's high profile lately is a plus for users. First, interest in the operating system by major vendors assures users that Unix will not fade from the commercial marketplace. Second, because a standard operating system forces vendors to be on equal footing with each other, companies will have to add value to their products in order to become distinct. Customers rejoice! By Stan Kolodziej. *Page 17.*

COVER BY CHRIS SPOLLEN

SPECIAL SECTION

Systems integrators

MIS has begun to embrace its traditional nemesis — the systems integrator. Long seen as a threat to MIS control, these entities are now being called upon to free information systems officers from their more mundane integration tasks so they can concentrate on managing the business of computing. Features Editor Michael Tucker explores the systems integration phenomenon. Page 19.

Digital has it now.

"When I took office, we had a totally manual operation. In fact, some of our files were still on 3″ x 5″ cards. We were bogged down by inefficiency," says Bill James, State Attorney for Hillsborough County, Tampa, Florida. "We have a reputation for being tough prosecutors. But with our heavy caseload, we realized we needed help."

How did Hillsborough County unshackle themselves from the past? According to Bill James, "We did it with an ALL-IN-1™ office automation network that Digital helped plan, design, implement, and support."

"We now have a system that ties together all of our offices, and integrates all of our office

"Office automation that took the Hillsborough County State Attorney's Office into the 21st century in less than five months."

functions," explains James. "We're scattered between five different buildings and we're *still* expanding. The system gives our attorneys access to the information they need, when they need it. And that frees them up to prosecute more effectively."

Bill James continues, "We knew what we wanted to do and that we had to do it fast. We also knew we had to protect the state's original investment in hardware and software. Digital took us from an item in the budget to operations in about 140 days. They also give us a seamless growth path, no matter how big we get."

To get *your* competitive edge, write Digital Equipment Corporation, 200 Baker Ave., W. Concord, MA 01742. Or call your local Digital sales office.

digital™

Keep it simple: There's room for less-complicated solutions

It was a pleasure reading Jim Young's article in your July 6, 1988, issue titled "Just say No to the Data Base High." There are too few voices in our industry arguing for a pragmatic approach to data management. Mr. Young puts a very timely challenge before the industry: "to tailor [the use] of technology to fundamental company needs."

My company was founded in 1979 with the goal of providing simplicity and productivity in applications development. While the data base management system companies focused on "journaling, checkpointing, change control" and so on, we focused on productivity and making our products accessible to a wider range of developers. Our products include the ability to use both flat files and the relational data model, not DBMS. The problem is that there is no recognized class, other than DBMS, into which our products fall.

Oracle Corp. recently defined our product — RDM — to be in a different class than theirs. Michael Wallace of Oracle said recently that "comparing us to them is like asking why a Porsche is more expensive than a Volkswagen." The Volkswagen analogy is appropriate; RDM is in fact less expensive, less complex and requires less overhead.

At Interactive Technology, we believe that there is a place in this world for Volkswagens. We believe that there is an equally large place in MIS for simplified, utilitarian solutions. Maybe there should be a separately recognized class of software products that are intended as solutions for less complex problems.

Donald W. Berg
Executive Vice-President
Interactive Technology, Inc.
Beaverton, Ore.

EDITORIAL COMMENTARY

Benchmark Beach Bingo: Vendor tests don't measure up

Remember those beach cartoons? The ones with women in bathing suits, looking like Betty Boop, and men looking like Charles Atlas? The guys flex their pecs and pump iron to impress the girls. They return the posturing with the kind of coy attention that could ooze out of a 32-oz bottle of suntan lotion. Is that what we've got going on with this summer's brouhaha over benchmarks?

You know the one we mean — how fast hardware runs your software, especially if you're in the on-line transaction processing business. You've heard about *that* business, the $21 billion market growing about 17% annually and dominated by IBM. Digital Equipment Corp. and Tandem Computers, Inc. want a piece of it. To get the coveted market share, they have to prove they can benchmark faster than anyone in the industry according to certain standards. But whose standards should they follow? That's the rub.

And if this summer isn't hot enough already, the heat's getting turned up with the story that IBM had intended to show Ramp C benchmark figures for its Application System/400 at the June unveiling. That is, until DEC made like a cloud and cast a shadow with benchmarking figures based on a debit/credit de facto standard.

All the while, users are slathering on the oil of promised acceptance. Maybe they'll go home with the new, faster hardware; maybe they won't. Then again, is anyone paying attention to these figures other than the competing vendors' marketing departments?

Maybe the heat's getting to us all.

Can't go it alone

As the industry matures, computer manufacturers are realizing that — like it or not — they can't go it alone anymore.

MIS can see this most clearly from the marketing actions vendors have recently taken. The number of cooperative marketing pacts and software development alliances (not to mention mergers, acquisitions and takeovers) is enough to make your head spin. MIS managers have a front-row seat for watching vendors acquire or jointly develop technologies and go after market shares with former enemies. At this point, it's difficult to know when you sign on with one vendor what other vendors you are also dealing with. Digital and Apple are two of the biggest vendors working together on common product development, but the trend has become pervasive throughout the industry. Even IBM, by joining the Open Software Foundation, has shown that it realizes it has to play ball with other vendors.

The reason behind this activity is that the heady days of computing, when just having a faster processing speed would make customers jump out of their seats, are no longer here. Both the technology and users seem to have reached a plateau. The newest product, no matter how many bells and whistles it has, won't cut it unless it fills a need. MIS and users are regrouping, assessing the technology, its costs and what the combination of the two will ultimately yield.

Today, users and MIS are demanding an integrated solution. Vendors, in turn, are recognizing they have to offer an entire package to attract users. The surge in systems integrators bears witness to this fact. Because even with the best intentions a single vendor can't provide it all, companies are being forced to adopt standards and an open systems environment. No matter how much the vendors might yearn for the days of proprietary systems, those times don't seem likely to return.

This change may in turn change the profession of MIS. But is this new scenario what MIS managers have been asking for all these years, or will you, too, yearn for the good old days when choosing one vendor meant choosing your entire system? Will you be saying "Set the Way Back Machine, Sherman," or "Full speed ahead"? Let me hear your views on your evolving role.

Ann Dooley

Write Us

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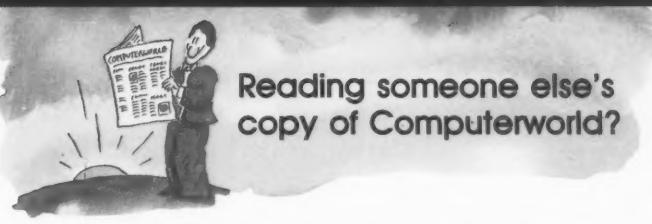
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   E. Office Automation Systems
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MANAGER'S
CORNER

A victory at the bargaining table

Jim Young

Information systems managers just can't win. Even as things improve in some areas for today's MIS professionals, the attendant complexities bring on new and perilous challenges. I am referring to what I sense is an unnoticed but significant change in the pricing of technology and services.

The good news is that the current competitive environment gives a company many opportunities to improve its cost structure. Special deals are proposed, counteroffers are forthcoming, and vendors are getting more creative about and aggressive in sweetening deals as a way to win business. Despite the obvious potential in such a buyer's market, this new twist does not make the MIS manager's job any simpler. On the contrary, it introduces several complications.

There are many difficulties associated with negotiated pricing, including the following:

• **Purchasing goods and services is less straightforward.** Years ago, one of the most satisfying things about buying foreign cars was the fact that the price was "take it or leave it fully equipped." No buyer had to be self-conscious about possibly being outdone by others. There are many MIS managers that may wish buying technology was that simple. While this kind of policy is inflexible, it eases comparisons and decision making.

• **The negotiation process can favor the vendor over the customer.** Without the knowledge of true cost, the MIS manager becomes the antithesis of Oscar Wilde's cynic — someone who knows the value of everything but the price of nothing. In the event that a product is especially valuable to a certain company setting, the unwary customer might inadvertently pay more to the vendor than a less enthusiastic customer would pay.

• **This setup may favor the negotiator over the casual buyer.** Negotiation means that the buyer feels he is not getting the best price. Having become more conscious of the flexibility of most prices, I am continually haunted by the possibility that I must have left a lot of money on the table — the vendor's table — over the years. Consequently, I run the risk of being dangerously overcompetitive in all future vendor dealings.

• **Deal negotiation adds a demanding and not altogether welcome facet to the information systems management task.** Because no MIS manager wants to leave money on the bargaining table and because each acquisition of goods or services presents a possible chance to save money, MIS tends to take on a somewhat jaundiced or even adversarial viewpoint. The role of deal maker often calls for an MIS professional to be shrewd, brazen, audacious and sometimes even ruthless. Unfortunately, not all of these traits are an asset in the performance of other MIS duties.

Rather than shunning the windfall advantages of pricing negotiations, it is best for MIS to follow some constructive rules in negotiating deals with vendors:

• **Know the facts about each situation.** Determine whether you can walk away from a particular product or service. If you can, hard bargaining may be appropriate. If it is essential that you strike a deal, be quite careful not to demand conditions that will prevent an agreement.

In any event, understand the position of the vendor, too. Does it need to make sales of an early product? Does it tend to offer more aggressive deals at the end of its financial period? Who is empowered to make concessions? In other words, know the situation and determine whether there is room to favorably adjust a vendor's proposal.

• **Know the latitude you have to work within.** In extracting concessions, know what the vendor can afford to offer. Find out from other customers what terms have been previously acceptable. Make sure to compare similar deals before applying other experiences to your own case. It is also helpful to understand what motivates each player — salesmen, technicians, related companies and the like — and how any deal may effect them.

• **Establish a point of comparison.** Whenever possible, include several vendors in your evaluation and allow them to compete for the business. Nothing encourages flexibility like competition.

• **Specify the features you seek.** It is true that the best deal is not always the cheapest. Vendors with higher priced products will remind you of this by differentiating their offerings using a variety of factors to justify the extra cost. However, this fact is true only when these features are worth at least that much more to you.

Be careful not to attribute value to a feature that will mean little or nothing to you. Removing competitive window dressing will facilitate comparisons of seemingly dissimilar proposals and promote opportunities for price adjustments. Other tactics include questioning marginal cost benefits or, when appropriate, demonstrating that high prices are outside of the budget.

• **Allow plenty of time.** Negotiating is a game of moves and countermoves that is over only when both parties say it is. Therefore, the side that is in a hurry is at a great disadvantage.

Even without the urgency of time, the process may take longer than originally planned. If there is a deadline you are

Young is managing director of MIS for the Wheeler Group, a division of Pitney Bowes, Inc. in Hartford, Conn.

David Gilmour

Lotus position: Executive leads company in its search for new twists, diversifications to its product line

David L. Gilmour is general manager of Lotus Development Corp.'s Advanced Products Division and is responsible for managing the development of a family of software products targeted at advanced personal computers and workstations.

Gilmour also has marketing responsibility for Lotus/DBMS, the Cambridge, Mass.-based company's planned entry into the data base management software market. The product is aimed at work groups under IBM's pivotal OS/2 operating system and the Presentation Manager graphics interface. Gilmour has a bachelor's degree in engineering and applied physics, a master's degree in engineering and a master's degree in business administration, all from Harvard University. He came to Lotus in 1984 after stints at Aviation Simulation Technology, Inc. in Bedford, Mass., and the Boston Consulting Group, Inc.

Following disappointing sales results from its Jazz software product and the recent decision to abandon its Modern Jazz development effort of 15 months, Lotus has come under more pressure to diversify its product line beyond its 1-2-3 spreadsheet mainstay. Gilmour spoke recently with Stan Kolodziej, *Computerworld Focus*'s senior editor, about the changing landscape of departmental computing and how Lotus is responding to it with its product mix.

Where is departmental computing headed?
A lot of the technology that is arriving is eroding the barriers and neat divisions that once existed among the different segments of corporate computing. I guess that's why I have a healthy skepticism about terms like "departmental computing" and "MIS."

For example, the arrival of the cooperative processing model for data bases is the major new technological development in this area. Servers and personal computers are [acting as front ends to] various kinds of data base engines that could be running who knows where. I think the boundary between personal and work group and departmental and corporate computing up and down the scale is a lot less clear, because those terms were really coined around old hardware technologies that will continue to exist but will also be joined by some new ones.

How is Lotus's product development fitting into these changes?
With Lotus/DBMS, we feel that we're really one of the first companies to come out with a PC graphical-oriented product for IBM Personal Computers, and we're going to target it initially at IBM's Presentation Manager.

Lotus/DBMS was designed to be a set of powerful data access and manipulation tools for users, designed from the ground up around [IBM's] SQL and cooperative processing. We're not bolting SQL and the relational model and front ends and back ends on as an afterthought. We're saying we think this is a very important structural change to the way computing is going to be done. It's part of a key group of product development efforts that tie us to SQL and local-area networks that we think will have a profound effect on what is called departmental computing.

In the old days, four years ago, we had to take positions as a company that we were for this environment or against that environment. I think what you see inside of Lotus now is much like what you see going on inside many of our customer locations — focusing on getting a large number of diverse technologies to work together.

What about Lotus's Blueprint development environment that aims at providing a standard interface between 1-2-3 and data formats?
That's the second important piece. The Blueprint architecture will be a universal way of connecting our application products to different data bases, data base engines and back ends of various kinds. Blueprint is a way for us to handle the wide variety of platforms where interesting data resides. Anyway you slice it, there is a need to get at data no matter where it resides. Our whole Blueprint strategy is an effort to deliver that to the applications folks.

Lotus built its reputation around a product — 1-2-3 — that is aimed at a stand-alone user market. What you've been describing with Blueprint and Lotus/DBMS is a radical departure for Lotus into a multiuser world that is very fluid in regard to connectivity and networking. You're also working with higher level programming languages like C. It's a big switch in product philosophy and research and development. There are those who say that Lotus does not have the corporate culture to carry its products into the mainframe environment.
I think that Lotus is an extraordinarily fertile place from a technological standpoint. That's the result of our effort, in the past three or four years, of systematically recruiting a mixture of PC-oriented people and seasoned veterans from other segments of the computer business. I really think people are speculating and connecting things that are unrelated by suggesting that the timing of our product shipping and the product strategy decisions we make are related to our R&D culture. I think you could make a compelling argument the other way that says we've got good strong technical people, they really want to get it right before it goes out the door because they have intrinsic pride in their work and they care a great deal

Manager

working against, be prepared to pay for a timely resolution through some costly concessions.

• **Think creatively.** Not every concession has to show up as a reduction to sales price. Some situations might not allow much of a "sticker adjustment," yet they can be made more attractive through the inclusion of such goodies as free technical support, extra options, deferred payment, return options and free installation or maintenance.

Nor do you always have to resort to confrontational angst to win these con-

cessions. Many times, the vendor is willing to arrange these bonuses as a way of bringing in more business without violating pricing guidelines.

A word of caution: Companies today increasingly need MIS to secure financially favorable deals. However, MIS is also responsible for minimizing the company's long-term risks. Straining for the last penny may win the battle but lose the war. MIS managers are not doing part of their jobs if overzealousness alienates vendors on whom the company must rely. Though the relationship may be confrontational, long-term gains will never materialize unless MIS negotiates with vendors firmly but with mutual honesty and trust.

Above all, the ability to get the best

deal during this era of haggling and concessions depends on being relentless in investigation and vigilant in locating alternatives. Achieving even more benefits takes attention, perseverance and time. It is my personal hope that commonly offered discounts and allowances will soon be factored into meaningful list prices and standardized offers, thus freeing the MIS manager from having to treat every purchase like an international treaty.

Until that day, MIS professionals will have to emulate today's airline travelers and work hard to find the lowest costs among complex and obscure pricing options. Likewise, the goal should be the same — to spend as little as possible to get to the intended destination.

Interview

about the outcome of their efforts.

Lotus has matured a great deal in the four years that I've been around here. We're working directly with major corporations as design partners in some of our forthcoming products in a way that we would not have dreamed of several years ago.

You can't build a serious software company on a bunch of BIOS hackers, but at the same time, you can't lose sight of the fact that the end user is ultimately the person who uses your software.

As hardware becomes more of a commodity and hardware platforms become less meaningful, there seems to be a growing emphasis on the software and value added in the way systems are packaged and sold. Would you agree with that, and if so, how will Lotus take advantage of these market changes?

I think it's very true. Increasingly, I think the proportion of value added by the software will continue to rise in many kinds of systems and that's a big deal from our point of view, because we think that horizontally focused packaged applications — products like 1-2-3, Lotus/DBMS and others — are really an excellent basis upon which others can further build and add value.

The job is in making it easy for end users to take responsibility for effectively specifying and prototyping their own applications with tools you give them, with tools that are similar to the tools they use every day for basic productivity applications. To address this explosion of computing power, you make it easier for people to customize their own environments and get special customized solutions.

Now that some big vendors such as IBM, Digital Equipment Corp., Hewlett-Packard Co. and Data General Corp. have joined in a Unix development effort, does that change Lotus's product development position on this operating system?

Unix is certainly not going to go away, and a lot of people are focusing good design attention on it. We are writing most of our applications in high-level languages now, and so the notion of moving software among environments is considerably easier today than it was many years ago. In fact, OS/2 and Unix have become closer than IBM PC-DOS and Unix were in terms of overall richness.

With things like SQL making it easier to handle cooperative processing across multivendor systems, some analysts say vendors will be looking to lock users in more subtly through user interfaces and other proprietary hooks. What is your position on that?

Locking anyone into anything is a horrible thought. I think users are pretty smart, and corporate customers who are systematically buying products are even smarter because they're working as a group. I don't think they're going to buy into solutions where flexibility isn't an important thing.

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news & analysis

Time running out on Unix?

Could there be a Unix detente in the offing?

The letterhead carries a mysterious red hourglass. The invite is from AT&T. The occasion is an upcoming Systems Unification Software Developers Conference. The systems in the "re-unification" seminar are AT&T's Unix System V Release 4.0, Sun Microsystems, Inc.'s SunOS, University of California at Berkeley's Unix 4.2 and Microsoft Corp.'s Xenix.

Is AT&T readying to spin off its Unix effort as a separate company for the purpose of licensing Unix source code?

The invite comes at a time when rumors out of Mountain View, Calif., indicate Sun is getting cold feet about AT&T's Unix. An industry source familiar with Sun and Hewlett-Packard Co., which is an Open Software Foundation (OSF) founding member, says Sun is shaken by the magnitude of some of the OSF players, especially IBM. Sun is also alarmed by OSF's intent to build on IBM's AIX Unix version, he adds.

CBEMA's LeGates: The chips are down; prices are up

Hope springs eternal. But it also may spring in vain.

In May, the Computer and Business Equipment Manufacturers Association (CBEMA) in Washington, D.C., was hopeful that by July memory chips would once again be plentiful and products would roll out on time. Hope again.

"I was a cockeyed optimist," confesses Charlotte LeGates, CBEMA's communications director, referring to her original expectation that the chip shortage would be resolved by July. MIS should "use imagination and flexibility" in making contingency plans for anticipated delays in receiving some or all of a computer order, she says.

Hewlett-Packard Co. in Palo Alto, Calif., for example, is postponing by up to six months its introduction of a desktop computer based on Intel Corp.'s 80386 processor because of the shortage in dynamic random-access memory chips.

CSS Laboratories, Inc. in Irvine, Calif., is also delaying delivery of its low-end laser printer because of the shortage in its dynamic RAM supply from overseas vendors. Original delivery had been scheduled for May.

About the larger issue behind the shortage, LeGates says, "Talk about not having learned from history. We've been here before; we'll be here again."

LeGates is referring to the boom-and-bust cycle in U.S. semiconductor manufacturing that has now reached chronic proportions. This cycle has been further compounded by the 1986 U.S.-Japan trade pact aimed at getting Japanese chip makers to stop dumping excess semiconductors on the U.S. market at below-market prices.

"There is talk that CBEMA might get into chip production themselves and of other semiconductor companies beefing up their dynamic RAM production," she says. Already, Dallas-based Texas Instruments, Inc. says it will be boosting its dynamic RAM manufacturing capacity to meet orders.

"Eventually, this [situation] will ease up, but I don't know when," she adds.

MIS managers may also want to plan for either increasing their budgets or buying fewer computers; the chip shortage is affecting prices. Digital Equipment Corp. in Maynard, Mass., raised its prices in June for systems and add-on memory products. The price increases for systems with embedded memory averaged about 3.5%, while add-on memory products averaged about a 35% jump. San Diego-based Science Applications International Corp. increased the price of its SAIC Delta Floating Point Processor card to $24,950 from $14,895 along with the caveat that a firm delivery date can't be guaranteed.

DEC to prove its desktop prowess at Decworld

When the sun rises on Decworld '88 next month, Digital Equipment Corp. is expected to roll out network enhancements to Decnet that will better integrate personal computers and workstations into the VAX/VMS architecture and operating system. Observes one

Coming back for more
1988 plans for Unix use

275 respondents
67.6%
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121 respondents
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11 respondents
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Decrease

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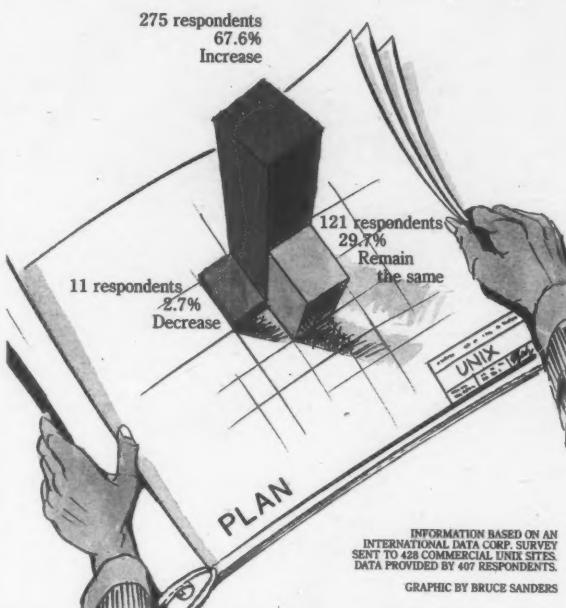
Revenue hike, shake-up boost IBM's confidence

For a company that has not shown its colors much beyond its own product unveilings, Big Blue appears to be waving its corporate flag more. Its increasingly public stance comes against the backdrop of a massive internal reorganization and a quickening of revenue after a long, slow period.

"I think we're seeing what IBM was like before antitrust," observes Marty Gruhn, vice-president of The Sierra Group, a market research firm located in Tempe, Ariz. Gruhn is referring to the 13-year antitrust investigation by the U.S. Department of Justice on whether IBM attempted to monopolize the U.S. market for data processing equipment. In 1982, the charge was dismissed as being without merit.

But in the six years following the dismissal, IBM executives faced tough market realities: the Personal Computer became an unanticipated and unprecedented hit, resulting in a fierce, competitive clone market; it became glaringly obvious that the company had too many disparate architectures for which there was no logical, migratable integration path; forays into the scientific/engineering fields were not booming successes; and worse still, IBM found its impressive market share in DP being eaten away by Digital Equipment Corp. as well as a host of smaller, more aggressive start-ups.

But under Chairman John Akers, IBM began mapping a way out of its self-designed wilderness. The results of a recent

> An analysis of the AS/400 in its second month of life. See story page 9.

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IBM's departmental darling holds the promise of a $45 billion market

When *Focus* last talked with Natalie Steele, it was the day before IBM publicly took the wraps off its Application System/400 mid-range products, which some still prefer to call by its friendlier code name, Silverlake.

Steele could not make it to the product introduction because her telephone had been ringing off the hook ever since word got out that the ivories had arrived. Steele is president of Mid-Range Products, Inc., based in Deerfield Beach, Fla. The company specializes in hardware and acts as a marketing agent for IBM "industry remarketers," the new term for value-added reseller (VAR) in IBM's lexicon.

"It's going to be great business for us," Steele says about the greater service required to port System/36 users over to the AS/400 line. "IBM just doesn't have the number of people to handle that kind of support." Instead, IBM is relying on electronic communications and a new range of comarketing and reselling programs, she says.

You've got to convert

Steele is referring to the flat file conversion from System/36 machines to the data base format of the AS/400s. So that there is no degradation in the run time, conversion is necessary instead of a straight recompile, she says. The amount of users that will likely require this service is immense because "the System/36 shop is IBM's largest target base."

During the next five years, IBM expects operating software

and training of the AS/400 user base to generate a market worth $45 billion in revenue, according to Steele.

IBM further estimates that two-thirds of that figure will be revenue made by second- and third-party agreements, she adds.

By this month, IBM was to have shipped 3,700 AS/400s that had been ordered before the announcement. Steele says that many of them are Model 40s intended as development boxes for VARs.

The seeds for eventual conversion to IBM's Systems Application Architecture show up in the AS/400's OS/400 operating system, which resembles the IBM Personal System/2's forthcoming Presentation Manager, Steele adds. She also predicts that along with the emphasis on AS/400's Token-Ring networking capability, IBM will push purchases of PS/2s in 1989.

Right now, DP managers are still only using IBM Personal Computers in emulation mode, Steele says. But IBM is making it so easy to plug in a PC to its AS/400 system that MIS will move in that direction, she predicts.

To meet the needs of that user emphasis, Steele says she and her employees, long accustomed to selling just mid-level hardware, will have to read up on networking products and PCs. "We're going to have to learn anything that is connected to the AS/400. It is going to require high-level expertise," she says.

At its June 21 press confer-

ence in New York, IBM repeatedly emphasized that the AS/400 represents a new direction for the company. First, the AS/400 "refreshes" the IBM product line in a way that makes it not a mid-range hardware offering but a low- to high-range computing solution. "It focuses on applications solutions not just compute horsepower," says Terry Lautenbach, general manager of IBM United States and senior vice-president of the U.S. Marketing and Services Group.

The AS/400 also signals recognition that "we can't go it alone anymore. The world is too complex, too diverse, too global," Lautenbach claims. As a result, IBM has put in place a third-party marketing program that will, for right now, help further develop migratory applications for the AS/400.

Easy move from 36 and 38

System/36 and 38 users should have a relatively easy time porting to the AS/400, according to Charles L. Massoglia, executive

vice-president of Massoglia & Associates, Inc., a consulting firm located in East Lansing, Mich. He is in the midst of helping clients make the switch.

"It's a migration instead of a convergence," Massoglia says about the System/36 source code. Only the workstation utility and the assembler are not supported, he says, and they are rarely used. Furthermore, a System/38 user should not have any difficulty unless he has deleted the observability programming feature from the program template, Massoglia adds.

The only features that take time to convert are the direct-access storage device files, and this process gets even more time-consuming if data is stored on diskettes, he says.

The AS/400 offers users a

greatly expanded growth path and software development tools for custom work. "The information retrieval tools for users are quite good," he claims.

Insofar as networking is considered, the AS/400's Distributed Data Management (DDM) allows for a one-way file access from the AS/400 to an IBM 370-class machine or with a low-end DDM to a personal computer, Massoglia states.

From a large-scale PC networking point of view, con-

sultant Steve Papermaster, president of Houston-based Business Systems Group, Inc., says that "users will be figuring out how to use the AS/400 either as a file server or as a hub for distributed processing."

Either way, the AS/400 represents "a lot of work to be done," he adds, estimating that it will be six to eight months before conversion, compatibility and software issues will be tackled.

Who's driving?

Michael Dortch, an independent telecommunications analyst based in San Francisco, commenting on the chances of the mid-range upgrade's acceptance by users, observes, "It depends on whether or not the networking enterprise is being led by MIS or if it's voice driven. If led by MIS, there will be an AS/400 integration effort."

However, network users "are looking for more elegant solutions to their voice-data integration and management problems," Dortch says. "When they see all the extra room in IBM's 9751 PBX, they may see little reason to buy a Silverlake machine."

He adds that the AS/400 line "isn't nearly as interesting as what might happen next to the 9751 PBX. If Silverlake has any interesting network management features, those features might find their way over into the 9751 product family," Dortch says, recalling that Ellen Hancock, IBM's communications vice-president, publicly stated it was her personal goal of having a central network management process so that network management is not an add-on.

"Then," Dortch explains, "Silverlake might be interesting." — HELEN PIKE

> ## Distributed talent
>
> The AS/400's design was distributed among 2,500 engineers and programmers during a 28-month period, with semiconductors being worked on in IBM's East Fishkill, N.Y., plant; computing expertise derived from its Boca Raton, Fla., and Toronto divisions; direct-access storage device technology from its Rochester, Minn., and England-based branches; and communications features developed in its Raleigh, N.C., division.
>
> IBM declined to reveal the research and development budget for the Silverlake project, except to indicate that more products are in the making as a result of the investment.

Update

Continued from page 8

market researcher, "This is the most critical area. DEC is likely to lose the war if they lose this desktop battle."

This year, Digital will "distribute" Decworld to 10 application centers around the country, plus to Cannes, France, for the overseas market. Taking place from Sept. 12-23, the show will focus on "integrating the enterprise" in the following markets: electronics in Santa Clara, Calif.; aerospace in Irvine, Calif.; automotive in Detroit; finance and food and beverage in Chicago; oil and gas in Philadelphia and Houston; telecommunications, utilities and pulp and paper in Atlanta; government in Washington, D.C.; manufacturing and telecommunications in Dallas; and finance in New York.

In departmental computing we do not trust

MIS managers are fair-weather friends when it comes to departmental systems. Departmental computing is held in little value when the economic going gets rough.

In a recent Sierra Group survey of 50 top MIS directors selected from Fortune 500 companies, the majority indicated that, should an economic downturn occur, they would protect budgets for personal computers and mainframes at the expense of departmental systems.

"There's a definite movement away from departmental systems and toward PCs and LANs, which lessens demand for departmental systems," claims Nancy Kirk, director of industry research for the Tempe, Ariz.-based organization. Kirk adds that while most MIS managers

will attempt to maintain the substantial budget increases earmarked for 1988, the departmental section of the overall MIS budget would be the one to get deeper cuts.

Apollo's Domain links to Wang minis via window hardware

If you've been waiting for it, it's finally arrived — in a window.

Wang Laboratories, Inc. and Apollo Computer, Inc. have jointly developed a terminal emulation package that allows users of Apollo's Domain Series 4000 Personal Super Workstation and Series 3000 Personal Workstation to use a window from which to access data from Wang's VS minicomputers.

The VS Window hardware, a controller board, is mounted in an IBM Personal Computer AT-compatible slot in Apollo's workstation chassis and linked to a Wang VS computer via

Wang's high-speed data link. The software allows an Apollo user to invoke VS emulation at any time within an Apollo Domain window. VS Window is priced at $1,800.

Wang announced in 1986 that it would jointly design access between its VS line and workstations from both Sun Microsystems, Inc. and Apollo.

Sibling rivalry: 9370 deals with the birth of the AS/400

In the wake of the AS/400 ballyhoo, IBM's 9370, the original departmental dynamo and supposed VAX killer, has been left quietly in the shadows.

The 9370 has fallen on hard marketing times. La Jolla, Calif.-based Computer Intelligence estimates that roughly 3,200 of the machines have been installed in the U.S., nowhere near the 10,000 or so machines that IBM and some analysts predict-

ed would be in Fortune 1,000 departments by the end of 1987 humming VM applications.

What happened? Some observers say that the 9370 line never had the software to pull itself away from competitive systems within IBM's product line, such as the Personal System/2s and System/36s.

First of all, it appears that almost half of the 9370s replaced small IBM 4300 systems. The 4300 legacy means that much of the applications that are now used on installed 9370s are batch-oriented financial applications running under IBM's batch-oriented DOS/VSE environments, under which most 4300s run. It is important software, but hardly the software launchpad needed by 9370s to make it big in the rough-and-tumble world of on-line departmental computing.

Furthermore, IBM's long

Continued on page 11

Let's make a deal: Firms team up for mutual gain

Like recurring dreams, rumors again surfaced that AT&T might be interested in buying Wang Laboratories, Inc. as 1.7 million shares of Wang stock were traded on Wall Street on June 27. Two days later, Data General Corp. made headlines as a possible takeover target by Unisys Corp. as its shares traded at 10 times their normal volume. Whether these deals go through this year or not, they are part of a growing trend to realize the dream of acquiring or jointly developing technologies and new market shares.

"It's the consolidation of the computer industry," explains James I. Magid, senior advisor to the investment bank of Needham & Co. in New York. "Technology is converging in such a way that companies have to participate from the bottom to the top. It will continue into the next decade."

For some firms, the impetus to merge or acquire is a matter of filling out a product line with microprocessor or mainframe capabilities; for others, it is access to Fortune 1,000 business markets.

Buy! Buy! Buy! *Computer firms are on a spree, acquiring others to get the technology they don't have in-house.*

Among the second quarter's new business activities were the following:
• Biin (pronounced Bine) was created as a joint venture between Siemens AG, a West German communications and computer conglomerate, and Intel Corp., a U.S. chip maker best known for microprocessors found in IBM Personal Computer-class computers, including Intel's 8088, 80286 and most recently, 80386 chips. Based in Hillsboro, Ore., Biin will act as an OEM of fault-tolerant transaction processing workstations aimed at mission-critical government accounts. Biin is expected to compete against Tandem Computers, Inc., Sequent Computer Systems, Inc. and Stratus Computer, Inc.

Joseph J. Kroger, one-time vice-chairman of Unisys Corp. and former president and chief executive of now-defunct Sperry Corp., will serve as president of Biin.
• Nynex Corp. bought the professional services and software products of AGS Computers, Inc. in a deal worth approximately $275 million. As part of the agreement, Microamerica, Inc., a wholesale personal computer distributor and AGS subsidiary, will be spun off as a separate publicly held company.

AGS's professional services division develops MIS and communications systems software for the telecommunications, banking, computer manufacturing and government markets. Analysts say they view this acquisition as an effort by Nynex to move into the software and systems integration arena.
• Perot Systems Corp. was launched as a systems integrator to help government agencies and large businesses reduce data processing and network costs. It was the brainchild of Electronic Data Systems Corp. (EDS) founder H. Ross Perot. In addition to competing with EDS, now owned by General Motors Corp., Perot Systems will go against Martin Marietta Corp. and Boeing Computer Services Co. The U.S. Postal Service and the Texas Department of Human Services are the first two clients Perot is trying to sign.

Perot's start-up team of employees is composed of eight long-time EDS executives, including Don Drobney, former president of EDS Communications Corp., a firm designed in 1986 to provide users with one-stop shopping for communications systems; Bruce Heath, an EDS vice-president in charge of information systems and factory automation for GM's truck and bus group; and Gary Wright, former president of EDS's government technology division. Pat Horner, former president of EDS's government marketing division was named president of Perot's enterprise.
• Hewlett-Packard Co. is reportedly holding hands with many kinds of companies as part of an ambitious and diversified market expansion plan.

Among the firms being courted is Zenith Data Systems Corp., with which HP is jointly bidding on a seven-year, $4.5 billion Air Force Computer Acquisition Center 451 contract for Unix workstations that also will run Microsoft Corp. MS-DOS. On the flip side, HP, which OEMs its printers to Zenith for government contracts, will put its name on Zenith's new laptop computer called the Supersport 286 Model 20 and sell it to the commercial market. On the communications front, HP signed a deal in May with Northern Telecom, Inc. for a strategic business alliance called Corporate Networks Operation. The venture will serve as a single source for the analysis, design, implementation and support of standards-based integrated corporate networks.

Currently in beta sites is a product that integrates HP's Openview network management system and Northern Telecom's wide-area Meridian data networking system. Both companies, which have worked together during the last 15 years, more recently connected HP's 3000 business computers with Northern Telecom's Meridian SL-1 private branch exchange.

On the desktop, HP is installing Motorola, Inc.'s 68030 microprocessor running at a clock rate of 25 MHz in its HP 9000 Model 360 as part of a new line of workstations. HP already has a workstation family based on its proprietary reduced-instruction set computing (RISC) design called Precision Architecture. HP is also said to be evaluating Motorola's RISC chip, the 88000. — HELEN PIKE

1-2-3 upgrade under wraps

Developers fear Release 3.0 will preempt their products

Lotus Development Corp., the Cambridge, Mass.-based developer of the 1-2-3 spreadsheet, has recently undertaken a series of projects targeted at producing software that will move the core benefits of 1-2-3 into the larger, multitasking environments of mainframes, big data bases and IBM's OS/2.

This is ambitious stuff and important to Lotus's long-term viability in the computer industry, but the eyes of most third-party software developers remain riveted on 1-2-3 and the six-month delay of 1-2-3 Release 3.0.

Release 3.0 is shrouded in mystery. For example, third-party software developers do not even know yet if Release 3.0 will run under Microsoft Corp.'s MS-DOS as well as OS/2 or only under OS/2. But they do know something big is under way with Release 3.0.

Wait until you get it right

"There are a lot of functions being packaged into Release 3.0," explains Eric Schultz, principal technologist at Cambridge-based Funk Software, Inc., a 1-2-3 add-in vendor. "Look what happened with the [Ashton-Tate Corp.'s] Dbase IV and [Wordperfect Corp.'s] Wordperfect 5 delays. There is so much being packed into these systems now. And I think it's better to wait and delay the product introduction until all the bugs are straightened out."

Marc Peterson, president of Personics Corp., a Concord, Mass., 1-2-3 add-in firm, says such delays are a two-edged sword for companies like his.

"If it weren't for the fact that the Release 3.0 delay caused confusion in the marketplace and it might cause some 1-2-3 users to jump ship over to [Microsoft's] Excel or [Borland International, Inc.'s] Quattro spreadsheets, I'd be happy for the delay because we have a substantial investment in our 1-2-3 product line, which we could amortize over a longer period of time," Peterson explains.

What Peterson says he and other add-in developers fear, however, is that Lotus could use the extra time to bring more functionality to 1-2-3, which could preempt their own add-in products.

"Lotus could take our product and other products and build them into Release 3.0," Peterson says. "Anytime there is a new rev level, all of us little guys hold our breath, cross our fingers and hope against hope that Lotus and other big companies haven't taken our products and put them into their main product."

What could Peterson and the others do about such a situation?

"Very little. It's happened many times in the hardware world; look at the Apple II," he says. "Apple started out supplying a number of expansion slots in the micro to accommodate third-party expansion cards. Soon Apple decided that some of the same expansion card functionality could be built right into the Apple II.

"IBM decided to build its [Video Graphics Array] hardware right into its Personal System/2 micros instead of relying on third-party people to supply them. Many people say that's going to be bad news for suppliers of micro graphics cards," Peterson says.

"The same thing happens to us in the software world." — STAN KOLODZIEJ

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By Rich Tennant

Update

and well-orchestrated buildup to the Application System/400 announcement in June was not lost on users and potential 9370 third-party developers. Both got the impression that almost everything in the mid-range market should remain on hold until the AS/400 appeared.

IBM looks like it hasn't abandoned its stepchild, however. Just before the AS/400 announcement, the company introduced substantial price cuts for many 9370 software programs, something that, observers say, was a long time coming.

IBM staff cuts seen as consolidation not redirection of product strategy

IBM's recent announcement that it would soon cut its work force between 3,000 and 4,000 generated some specu-

IBM confidence

reorganization as well as the announcement of a more cohesive product direction are going to make IBM "a tough competitor in the next two years," Gruhn says.

Public scene

Already there are several key examples of IBM testing its mettle in public.

After a patent review in April, the Armonk, N.Y., company began preliminary licensing of its Personal System/2 line, while at the same time demanding retroactive licensing payments for other patents related to its original Personal Computer line.

More recently, IBM began warning competitors that they may be infringing on patents for the reduced instruction set computing design it originated in the mid-1970s.

Meanwhile, on the very visible public front, Akers was found shaking hands for the benefit of photographers with Digital Equipment Corp. Chairman and President Ken Olsen at the launch of the Open Software Foundation, a group promoting an open systems standard for Unix.

Last holdout

As possibly the last major corporate holdout to Apollo Computer, Inc.'s Network Computing Forum, IBM officially joined the nonprofit organization that is dedicated to fostering the development of the next generation of networked computing. IBM also showed solidarity with competitors in March at the Corporation for Open Systems press conference on the status of the Manufacturing Automation Protocol/ Technical and Office Protocol movement.

In September 1987, IBM formally joined AT&T and others in stating their support for Sematech, an industry research consortium designed to restore the ability of the U.S. semiconductor industry to compete with the Japanese chip makers.

When asked about the "new" IBM, one Digital executive commented, "It's going to be a tough fight. [Akers] is a former carrier pilot. I've had three of them work for me in the past, and they come out gunning for you." — HELEN PIKE

lation in the press, but Bob Djurdjevic, president of Phoenix, Ariz.-based Annex Research, said not to look too deeply into the situation.

It was, according to Djurdjevic, an ongoing continuation of IBM's massive and gradual consolidation of its work force that IBM Chairman John Akers announced in 1986. It does not signal a significant redeployment or redirection in IBM's product or marketing strategy, and, he says, there will probably be more such consolidations to come.

Overall, the consensus is that the moves are more a tactical than strategic maneuver by Terry Lautenbach, general manager of IBM United States and senior vice-president of the U.S. Market-

ing and Services Group.

"IBM's phaseout of its Boca Raton, Fla., personal computer manufacturing operations makes sense, because the Boca Raton facility was also producing 3270 terminals that are being replaced more and more by Personal System/2s and other IBM micro lines," Djurdjevic explains.

According to Bob Tasker, vice-president of systems and peripherals research at International Data Corp., a market research organization in Framingham, Mass., IBM is moving its Boca Raton Personal Computer operations to another IBM PC manufacturing operation in Raleigh, N.C. This action was the result of Lautenbach's noticing some manufac-

turing overlaps between the two operations.

"Apparently, Lautenbach saw that the Raleigh modem manufacturing operations could handle much of the same PC assembly that Boca Raton was handling," Tasker says. "My source in IBM tells me that even the savings in freight costs between the two places were scrutinized."

As for Lautenbach, who assumed his position in January, Tasker says the personnel cuts and other consolidations were no doubt a way for the IBM executive to put his personal stamp on his new position.

"Lautenbach is known as a hardnosed, no-nonsense manager," Tasker says. — STAN KOLODZIEJ AND HELEN PIKE

DEC closes in

But don't count IBM out

BY HELEN PIKE

Picture this: a center circle representing the batch style of mainframe data processing. Surrounding it is a larger circle of time-sharing minicomputers. A third circle, larger still, stands for the independent personal computer. Encompassing all that computer technology is the largest circle yet: networked communications.

Now step back and imagine this picture in terms of the MIS industry's second most significant player — Digital Equipment Corp. The degree to which the company can tighten its circles around IBM and other competitors is the degree by which to measure the Maynard, Mass.-based corporation's long-term success. Unless, of course, the Big Blue elephant neatly slips out of the noose and lumbers away.

Revitalizing its sales effort, offering hardware that will grow with customer needs and signing on third-party software developers for niched users are the three related circles DEC is knotting to tighten its MIS market share. Among the Digital executives laying rope down in the MIS jungle, Pat Mullen, DEC's information systems marketing director, is one of the more visible. From 1980 to 1985, he had charge of corporate field information services, during which time he analyzed the MIS marketplace and how best to cut paths into the IBM market. What Mullen came up with are MIS point men that help direct sales efforts that have too long been accustomed to knocking on engineering doors.

"Gray hairs required," Mullen jokes, quoting an imaginary recruitment ad. "It was a case of reverse age discrimination. I hired guys out of retirement who were in their 60s."

Beginning in 1985, DEC started hiring retired information systems directors and did so on a region by region basis for a better spread around U.S. markets. Some of these hires are retired IBM MIS professionals who are helping DEC salesmen make, and field service representativies retain, the MIS sale. Some of the graybeards came from Bankamerica Corp., Mead Data Central,

Hamilton Avnet and Sandoz Pharmaceuticals. So far this year, they number 100.

Another part in the circle that represents DEC's approach to MIS sales is to "augment, not replace," customer systems, Mullen explains. "A vendor shouldn't tell a customer how to change its computing division." According to one IBM value-added reseller, DEC's strategy worked with some IBM System/36 users who had reached their limit and were waiting for IBM's Application System/400. DEC sold against IBM by offering a growth path, not another computing ceiling, the reseller says. "It's not a 'faster, cheaper' strategy," Mullen adds. "We're in it for the long term."

Last year, information systems sales

accounted for 50% of DEC's total revenue of $10.4 billion, according to Mullen. Revenue was $180 million in 1972, and nearly all of that represented sales to the engineering and scientific communities. In the first nine months of fiscal 1988 that ended June 30, Digital's revenue was $2.8 billion.

Downplays Unix

Mullen downplays how much of that revenue amounts to commercial sales of DEC's VMS operating system vs. Ultrix, its proprietary version of Unix. Says Mullen, "Unix as defined today for commercial information systems is still designed with the engineer in mind. There's no security, and it still doesn't have file pro-

cessing and screen handling."

However, DEC is expected to announce this fall that it will OEM a reduced instruction set computing (RISC) board from Mips Computer Systems, Inc. in Sunnyvale, Calif. With value-added engineering from DEC, it may run both Ultrix and VAX VMS. Mullen would only acknowledge DEC is looking at RISC as a low-cost means of computer production.

A former Honeywell Bull, Inc. and Scientific Data Systems employee, the 16-year DEC veteran claims the spheres of DEC's computing culture and the MIS community's needs are intersecting.

"There are a lot of things driving [information systems] behavior that fits our style," Mullen observes during an inter-

view at DEC's marketing offices in Marlboro, Mass. "A lot of firms are coming to the matrix organization that DEC has had — of reorganizing itself every year."

In the years ahead, Mullen says, the structure of MIS departments and the companies they serve will change to emphasize external customers and products. A lot of product customizing will go on in order to reduce costs, he adds.

"More and more, MIS is being asked to make money, to help find ways to improve time to market and product differentiation, to not be just an accounting system," he says. "Also, MIS systems are evolving into systems to support customers as opposed to internal employees."

DEC says it wants to be at that customer intersection between better productivity and profits, to help the user choose the right technology to meet his individual business goals. Because both business and technology are becoming increasingly complex, DEC plans to step in "to remedy the lack of technical know-how and to set up technical support," according to Mullen, who predicts that other vendors will also be quick to offer business planning, management skills and technical expertise to clients. Already DEC has raised its technical support-to-sales support ratio from 7-to-1 to 2-to-1.

"The hottest issue in the industrial sector this year is integrating information systems and the factory," Mullen says about the intersection of user needs and vendor wants taking place. "The needs of the market coincide nicely with DEC's strategy to integrate the enterprise," he adds, seeding the conversation with the theme for Decworld 1988. "Networking is not an end in itself. It's the benefit."

Integrating the enterprise is a direct strategy for counteracting networking advances being made by such competitors as Sun Microsystems, Inc., Mullen says. DEC will emphasize "a more holistic integration" that is optimized around a division or entire company, not around an individual user, he adds.

"Decnet wasn't an afterthought. It was built in" to the VAX family of products, Mullen claims. As for IBM's AS/400 and its new connectivity features, Mullen says there is no threat posed to DEC's advances in cutting through the communications jungle.

"The philosophical difference [in computing] between IBM and DEC has to be in the network. A flexible network allows you a changing environment in which to adapt. It's the master/slave approach of IBM vs. the flexibility/equality of DEC."

Like the remainder of the MIS community, Mullen will be waiting to see if IBM draws the final circle in computing as it moves towards its Systems Application Architecture. But neither Mullen nor DEC will be resting. At Decworld, Digital is expected to place heavy emphasis on network management products and on enhancements that will better integrate PCs into the Decnet network and the VAX/VMS operating system. The products are expected to further leverage PC integration deals signed so far this year with Apple Computer, Inc., Compaq Computer Corp. and Ing. C. Olivetti & Co.

Ken Olsen, DEC's founder, president

Pat Mullen

SAMUEL'S STUDIO

and chairman, "saw the potential for distributed computing across a cluster four to five years ago and went after it by repositioning the company to take advantage of it," observes Donald Bellomy, a senior analyst at International Data Corp. (IDC), a research firm in Framingham, Mass. "That's the kind of circle DEC is running around IBM."

IDC figures show that sales of Digital's small-scale computers experienced a compounded annual growth rate of 10.5% between 1982 and 1987, while medium-scale computers grew by 33.4%. By contrast, IBM's small-scale computers grew by 19.6% and its medium-scale computers by 10.2%.

But IDC numbers of the archrivals' worldwide installed base by the end of 1987 show a sizable distance between the two: IBM with 9.95 million PCs and small- and medium-scale computers vs. DEC's 689,600 for its VAX and PDP-11 families combined.

Says Bellomy, "During the next 1½ years, there will be a series of attempts by DEC to take its VAX architecture and specialize it in some area, customizing it for customers. On-line transaction processing will probably be the first area; scientific/engineering the second."

He adds, "Digital is trying to make an architectural design for the science market fit commercial purposes. What DEC is trying to prove is that you can really do all those things with one architecture competitively.

"IBM has proved you can take an old architecture and reuse it," he adds, referring to the AS/400, whose design origins are from the System/36 and 38.

But the AS/400 is not responding — not yet, at least — to networked computing or clustering, DEC's key technological strengths, Bellomy says.

For one former IBM data base manager, however, the issue isn't networking — at least not yet. It's still computing.

In February, Michael Pavia left the bank for which he was working to manage the VAX-based data bases at Litel Telecommunications Corp., a 4-year-old digital fiber-optic network company in Columbus, Ohio. Pavia left behind an IBM 3090 and 3030, 100 applications programmers and a sole Digital PDP-11/780 that was to have been upgraded to a VAX 8550. Pavia claims the DEC box "had no one to adopt it and be its champion" because the technical staff was so used to working all the data bases on IBM equipment.

What Pavia did, in effect, was a wholesale adoption of the Digital form of computing when he left his data base job at the bank. One reason he went to Litel was his desire to work for a start-up; the company has only 20 applications programmers. But the second, equally important reason

Digital's Mr. Inside

BEL CROSS, corporate manager of Digital Equipment Corp.'s information systems, plays Mr. Inside to Pat Mullen's Mr. Outside. At 49, Mullen, DEC's information systems marketing director, typifies a growing number of MIS professionals with business degrees who learn about technology from on-the-job involvement. At 46, Cross has both a mechanical engineering degree and a MBA. He has been with DEC for 18 years, previously working for defense contractor Raytheon Co. and semiconductor test equipment maker Genrad, Inc.

Like Mullen, Cross doesn't do his job in the renovated mills in Maynard, Mass., where DEC has its worldwide headquarters. Cross, who accesses data and applications off a Microvax II GPX color graphics workstation, works 10 miles away in Concord.

Bel Cross

"The challenge is to get Digital to be completely information based. We're in that transition now," Cross says. "I came at it from a user perspective. I wanted control of my own destiny vs. having to ask for it. It made my job more doable.

"Distributed is not a decision to centralized or decentralize," Cross observes. "Distributed information services is to customize work per work request. It means to keep pushing compute capacity closer and closer to the people who need it."

Computer-aided software engineering, fourth-generation languages and training users to write their own access to data will be among the issues Cross says he believes he and his colleagues at other companies will be dealing with in the near future.

Among Cross' tasks are to integrate voice and data "as we manage our wide-area networks and the overall challenge of managing the bandwidth as a cost-effective resource." Half of his staff of 400 works in telecommunications technology, many in network management. In his estimation, the most cost-effective applications portfolio at any given time would consist of a network technologist and a technical person who knows programming languages and architectures.

Where Cross and Mullen come together is in solving customer information systems problems. "I like to help influence products and work with marketing for the right product set," Cross says.

"My engineering peers are my best friends and toughest customers. The challenge as Digital picks its percentage of investment dollars is that I want to influence the products that will make Digital the happiest [internally]," he adds. — HELEN PIKE

met a need," he says, and not as a desktop device worthy of being integrated into the VAX family.

Angelico also recalls the 1986 software licensing debacle when headquarters told users they couldn't resell their software license with their old DEC equipment, that new users would have to go back to DEC and buy another software license for the used equipment. The yowl sent up by users caused the company to rethink its position. Angelico is happy that the company appears to be mending its ways.

Even though "DEC's reps, corporate and public relations aren't marching to the same tune," he hastens to add "that is true of all vendors. Sales reps are often the last to know of a change in pricing or bundling."

Angelico has managed the U.S. Coast Guard's computer assets for 21 years, his last eight on Digital equipment. He is also familiar with Big Blue.

"IBM was trying to give us the hard sell. But in government you make a significant investment in one vendor, and it's hard to change when the budget has been made up [for] three years," he says.

Angelico also admits he doesn't keep up with the changes in IBM's architecture because "it's too complicated. Are you doing System/36, or 34 or 38 or mainframe programming? With VAX, it's all one."

Digital's strategy is to change the style of computing, not its architecture, observes Marty Gruhn from The Sierra Group in Tempe, Ariz., referring to the mileage DEC is still getting out of its 11-year-old VAX architecture. "The IBM environment was intended to be machines you could bang on all day long. The VAX architecture is optimized to be a screamer so you can compute pi.

"DEC wants to be the guy on the shortlist with replacement products," says Gruhn, the market research firm's vice-president. "They're getting better at it."

An equally visible method for DEC to cut pathways to users is to sign partnerships, especially with software companies like Oracle Corp., Lotus Development Corp. and Advanced Systems Concepts, Inc. — a strategy IBM only just adopted with the AS/400.

"MIS is reacting a lot to the user environment. It is trying to be more proactive," she says. "MIS is being driven by users who want cheap networking, vendors who sell the competitive advantage and the bottom line of productivity or business benefits."

For the rest of 1988 and into 1989, Gruhn claims, "DEC will give IBM a big headache." ❖

was a desire to learn a new form of computing. Litel has two VAX 8550s, an 8600 and a PDP-11/780 slated for an upgrade to a 8550, all in a cluster arrangement. Already Pavia has noticed that on a Vaxcluster, "there is more availability than the old 3090 I used to work on."

Pavia learned the ropes of computing in an IBM environment, beginning with IBM's 360 and moving all the way up to a 3090 on MVS/XA using IBM JES3. It is his observation that the migration from IBM's to DEC's style of computing is easier.

"IBM thinks big. Digital doesn't," Pavia says. "There's less to learn on the VAX."

Though he finds it easier, Pavia is still new enough to the DEC environment to be sorting out its pros and cons.

DEC's environment for applications development is less structured than the IBM's, but this freedom can "lead to a breakdown in discipline," he says. In the IBM environment, file naming has to be standardized, but in the DEC environment, "you don't have to go through the [job control language] to create a file. That makes it nice because it's easy," Pavia says.

But when a programmer gets to the large-scale computing environment that typifies most IBM shops, he has to individually tune the files. In the typical large-scale IBM environment, "you just tune the JCL by throwing buffers at it."

But asking, "Isn't this a lot better than JCL?" is the wrong question to pose, Pavia claims. "It's not better, it's just different," he says.

Vive la différence?

Pavia sometimes wonders if DEC's designs run counter to the usual way of programming just for the sake of product differentiation and not because it is a better way of doing it.

"The dump utility on the VAX is right to left. On IBM, it's left to right," explains Pavia, who adds he was told the change in direction was done simply "to be different."

Right now, Pavia is trying to

assess whether sufficient processing can be done better on a lot of little boxes or if gains can be made on one big box — the classic differentiation between Digital and IBM.

Regardless, "Digital's much cheaper to buy than IBM," he says, but on the other hand, "Digital locks managers in with more applications.

"When [DEC] can pull off a multiprocessor environment and not impact anybody, they will have achieved something," Pavia concludes.

Joe Angelico, a member of the Digital Equipment Computer Users Society, or DECUS, says DEC achieved something significant when it signed a cooperative deal with Apple for the low-end MIS market. "I'm glad to see them recognize the Mac as a real live computer," he says. In doing so, DEC corrected a strategic blunder made when it released the Rainbow, its low-end personal computer that didn't go far in user acceptance, neither in nor out of DEC shops.

"DEC just treated it [Rainbow] as a piece of equipment that

"We chose to advertise in Computerworld because we recognize it as the industry leader. ...But best of all are the results."

— Larry Harman
President
BridgeWorks Software, Inc.

As President of BridgeWorks Software, Inc. (BSI), of Schaumburg, Illinois, Larry Harman is pleased that his company makes life easier for many American businesses. BSI develops and markets software that allows applications/systems software and artificial intelligence packages — that normally cannot work together — to intercommunicate.

Connections that would be impractical or cost prohibitive for users to attempt themselves are made possible by BSI — which also provides support and enhancements to keep up with software upgrades. Larry believes that ongoing support is important. So is advertising. That's why BSI has made *Computerworld* its choice.

"We want to gain name recognition from our advertising. It's nice to get sales directly from an ad, certainly, but optimally, it should all work together — sales should follow name recognition.

"We chose to advertise in Computerworld *because we recognize it as the industry leader. And because of its large and high-quality readership.* Computerworld *delivers the kind of audience that includes software developers and MIS professionals. That's important to us, because we need to reach both.*

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COMPUTERWORLD

IBM revs up 3090s — with a hitch

Rolls out biggest mainframe ever

INSIDE
In Depth: Price Waterhouse expects more from microcomputers. 53

Lack of advance notice riles users

A user's market

VAR channels, standards support enrich Unix

BY STAN KOLODZIEJ

Unix is resurgent, and its new vigor is due as much to a shift in marketing channels and its public persona as it is to user demand or technical innovation.

The system is being talked about, being analyzed, being pursued by vendors and value-added resellers like never before.

That's good news for users, because the more that people chase Unix, the more the market takes a serious look at Unix as an operating system that can make the transition from a technical user base into mainstream commercial computing.

A lot of big names are backing Unix. It would be hard to discount an operating system that carried enough market weight to bring together such unlikely team players as IBM, Digital Equipment Corp., Hewlett-Packard Co. and Apollo Computer, Inc.

Natural enemies in the marketplace, these companies shook hands recently like lifelong friends when they announced the formation of the Open Software Foundation (OSF), which is dedicated to producing a viable alternative to AT&T's de facto Unix System V standard.

OSF has done wonders for the public image of Unix. "If Unix wasn't such a threat to the proprietary systems of IBM and the others, then why would they make such a fuss, and what else could get the likes of [DEC president] Ken Olsen and [IBM chairman and president] John Akers together on the same platform?" asks Bill Gimple, vice-president

Kolodziej is *Computerworld Focus's* senior editor.

of systems technology at Pyramid Technology Corp., a Unix software vendor in Mountain View, Calif. "It's sinking in with the industry that Unix is important."

Others, however, do not see much change.

"There's a lot of hoopla about Unix, but I don't see it as a major player in the business environment," says Mike Farrell, vice-president of systems at Automatic Business Centers, Inc., a payroll processing organization in Morristown, N.J., and a self-proclaimed IBM fan. "I don't see DEC or IBM going to Unix as the savior operating system. Unix buys us nothing that IBM's mid-range operating systems don't already have."

Maybe so, but it's a sure bet that the OSF has made Unix a political as well as technical issue and might direct attention toward Unix for quite some time. It will be interesting to keep an eye on OSF and other market developments, because they will no doubt have a great influence on the form Unix takes and the way Unix is packaged during the next few years.

First, by placing the issue of a Unix standard at the forefront of major industry concerns, vendors have sent a message to Unix users that the operating system will not fade in the commercial marketplace. If anything, the support from major computer vendors such as IBM, DEC and HP will spill over into a much larger base of third-party software developers and OEMs than Unix has enjoyed to date.
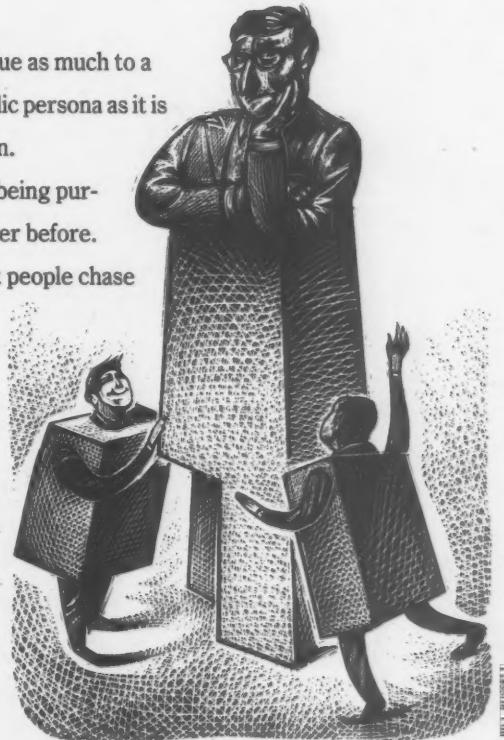
Secondly, the push toward standards tends to level playing fields. No doubt Unix users will see Unix systems vendors work harder to add more value and distinguish themselves from other Unix-based systems vendors. The days of proprietary computer hardware are gone. And the debate on Unix standards is a strong indication that standardization in software is also desired in many quarters.

"The users are going to be much more in control than they ever were," explains Charles P. White, program director of industry services at Gartner Group, Inc. in Stamford, Conn.

"With a standardized Unix running over nonproprietary

hardware, systems vendors are going to have to try and lock users into their systems through more subtle means such as proprietary user interfaces. Even so, users are going to be in a much better bargaining position to demand more from vendors because they will be able to move their applications across platforms more freely," White says.

Paul Cubbage, senior Unix analyst at

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>
> BILL GIMPLE
> PYRAMID TECHNOLOGY CORP.

Dataquest, Inc., a San Jose, Calif., research firm, says Unix standards will bring more innovation, not less.

"Unix is like the generic engine around which solutions are built," Cubbage explains. "Vendors are going to have to hustle in their marketing and the value added they bring to that market."

Herb Osher, vice-president of marketing at Data General Corp., says proprietary operating systems will be around for many years to come simply because they are more reliable and will be for quite some time.

According to a recent computer industry report issued by Framingham, Mass.-based research group International Data Corp. (IDC), however, vendors have cast a negative image about standards in the past. They have tried to position standards as lowest common denominators that inhibit innovation and make all vendors' products look alike.

But the reality, according to the report, can be seen in something like the de facto standard of Microsoft Corp.'s MS-DOS, which grew up around IBM's Personal Computer. The applications market surrounding MS-DOS has been anything but homogenized, instead offering many hardware and software options.

Even so, Cubbage says he thinks there will always be the specter of what he terms "creeping featurism" in Unix office applications. "For years, [office automation] vendors have been trying to meet all the requirements that analysts, users and the press say are needed. But before the vendors can get their products out, there are always more needs introduced," Cubbage says.

And as the tide moves away from nonproprietary architectures, some big vendors are suddenly raising the standards flag. For example, Data General, criticized for lingering too long with proprietary systems, has quickly embraced Unix. DG now has to sell its customers on the company's two-pronged operating systems strategy.

"We are not abandoning our existing customers," Osher maintains. "We have three generations of proprietary operating systems that we will build Unix products on top of. Unix will not supplant our existing operating systems; Unix will integrate with them."

At DEC, President Olsen had reiterated time and again that Ultrix, DEC's Unix version, was not needed because of the huge popularity of DEC's VMS operating system. For the last few months, howev-

er, it appears that a major shift has been under way at the company that places much more emphasis on the future integration of Unix in DEC's marketing scheme. DEC's banner-waving in OSF confirmed that such rumors are true.

And as IBM and DEC expand their commitment to Unix, they have also pledged to integrate Unix products into their existing operating environments, including such strategically important high-end communications systems as Digital's Decnet and IBM's Systems Network Architecture.

The sudden looming of DEC, IBM, DG and others in the Unix world is a healthy sign for Unix's expanding role in departmental computing. To date, Unix has enjoyed only nominal market penetration in major Fortune 500 firms.

Where Unix has scored is with vertical niche markets catering to small- to medium-size companies or in selected departmental applications in large corporate departments. These are much more flexible accounts than the large IBM and DEC installations in which data processing departments see little reason to expend resources on the difficult task of trying to jury-rig Unix applications and protocols to IBM's MVS and VM or DEC's VMS operating system.

Figuring Unix in the budget

A recent study of medium-size companies conducted by IDC indicates that less than 14% of Unix budgets is under MIS control. According to IDC, this figure is surprising, considering that nearly half of the sites have Unix systems functioning as corporatewide systems.

The researchers reason that MIS might still be avoiding Unix systems. The survey was conducted, however, before the overt outpouring of Unix support from the big vendors.

The niche Unix commercial market is another world, represented by such software-driven (and generally unpublicized) systems integrators as Uniplex Integration Systems, Inc., Quadraton Systems, Inc., Computer Consoles, Inc. and Unify Corp.

In this world, the direction is vertical, the emphasis is on tightly controlled applications and the bottom line is more power for less money. The financial markets, the government and education are big vertical markets for Unix systems.

On the hardware side, the Unix market is dominated by the likes of Altos Computer Systems, Convergent Technologies, Inc. and a few other vendors whose skills as systems integrators enable them to fit processors, disk drives, communications and specialized software together into high-powered systems that can deliver minicomputer speed at prices per node that edge into the personal computer range.

Importantly, years of toughing it out in the Unix market have given such vendors

the inside track with Unix value-added resellers (VAR).

"It's the vertical markets and how you support them that are going to be the major areas of success in the Unix market," declares Dick Nisley, marketing manager at Altos. "If you're in tight with the best VARs, you're in good shape."

Unix VAR channels are about to change dramatically. They are soon going to be chased by the likes of DEC and IBM for their systems integration expertise. That's not all that will change in the VAR market. With more standardized hardware and software platforms appearing, VARs are going to have more freedom in moving their value-added software and expertise across vendor systems.

"There has been a shift occurring in the [Unix] market," explains Roger Sparks, vice-president of marketing at Thoroughbred Software, a Concept Omega Corp. company based in Somerset, N.J. "VARs are beginning to call a lot of the shots. Vendors are more inclined to offer top VARs special considerations and sales perks in order to keep their business. VARs will pass some of [those perks] on to users."

Pyramid's Gimple says that the market is about to turn the tables on the vendors.

"Vendors haven't given VARs enough product variety," Gimple maintains. "Of the [approximately] 4,000 VARs out there, most are selling low-level machines, and as the requirements of customers change, VARs have had a hard time moving customers up to larger systems and applications.

"As standards come about at all levels, with user interfaces, programming standards, communications, connectivity and data base standards, it gives VARs the flexibility to bring their customers into higher level systems installations," Gimple reasons.

"MIS [managers] are also pushing standards because they are scared out of their wits about the confusing array of technologies in the workplace. Standards give them more sense of control," he adds.

Despite such movements, Nisley says, it's not quite a VAR market yet.

"Computer hardware approaches a commodity basis, and there are fewer ways to differentiate among the vendors, but there are still a number of user interface standards floating around," Nisley

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> ROGER SPARKS
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explains. "Unix is cryptic and unfriendly, so each of the 40-odd Unix developers have their own interface system.

"Beyond that, you have at least a half dozen competing windowing packages from Sun Microsystems, Inc., Hewlett-Packard, AT&T and so on, on top of which are such communications standards as [IBM] Token-Ring and Ethernet.

The key is what standards a systems integrator will select in designing a system," Nisley says, "because the combination of standards cannot be easily replaced yet."

In a sense, the way multiple standards are built together into a system will amount to a certain kind of proprietary quality about that system, Nisley explains.

Even so, the Unix market is changing, Gimple says, and users should be aware of it. "I think the sophistication of users understanding what is happening with Unix and the market in general is anywhere from slightly to grossly underestimated by vendors," he claims. "In the past, IBM established the methodology to lead the customer: Get in there, establish account control, set it down, take over the planning of the installation from the user, and map out chapter and verse where they ought to go.

"Customers are moving away from that. A lot of clients have internal expertise that vendors have trouble competing with now, and I think these market developments are going to strengthen the customers' ability to be more independent," Gimple says.

Users should look for workstations based on reduced instruction set computing (RISC) to further lift Unix into large systems installations. Unix and RISC-based machines have been a comfortable fit for the past five years, and RISC architecture technology continues to make strides. Most processor architectures that vendors employ today, on the other hand, date from the mid-1970s.

"The only thing that has kept these [non-RISC] architectures alive," Gimple says, "is that integrated-circuit technology has moved quickly enough to keep taking these architectures and squeezing them down on chips, making them go faster."

When you start applying integrated-circuit technology to an architecture such as RISC, an architecture that has inherent advantages in such important areas as instruction sets and execution speed and addressing, more conventional processor technology could be in trouble. And once users realize the benefits of using RISC-based machines as file servers and systems for cooperative processing, the jump of RISC from a technical market into a commercial one will be quick.

Ironically, market perception could play as big a role in Unix's success as the inherent strengths of the product itself.

Market perception is intangible but a strong force in the industry today. One analyst, for example, has suggested that in two years, much of the cynicism that first surrounded IBM's announcement of its ambitious Systems Application Architecture (SAA) project has been replaced by general support and enthusiasm, even though IBM has yet to produce an actual SAA product.

"If the market believes that a company will succeed at something," the analyst maintains, "then it's a pretty good bet the company will succeed."

Unix could be building some real positive market perception around it. "Remember, a lot of people have recently been presented with the scene of top vendors running to establish solutions that look an awful lot like Unix solutions — that is, multivendor solutions with consistency across [operating] environments," Gimple says. "That's as good an endorsement for Unix as you can get." ❖

TOM MONAHAN
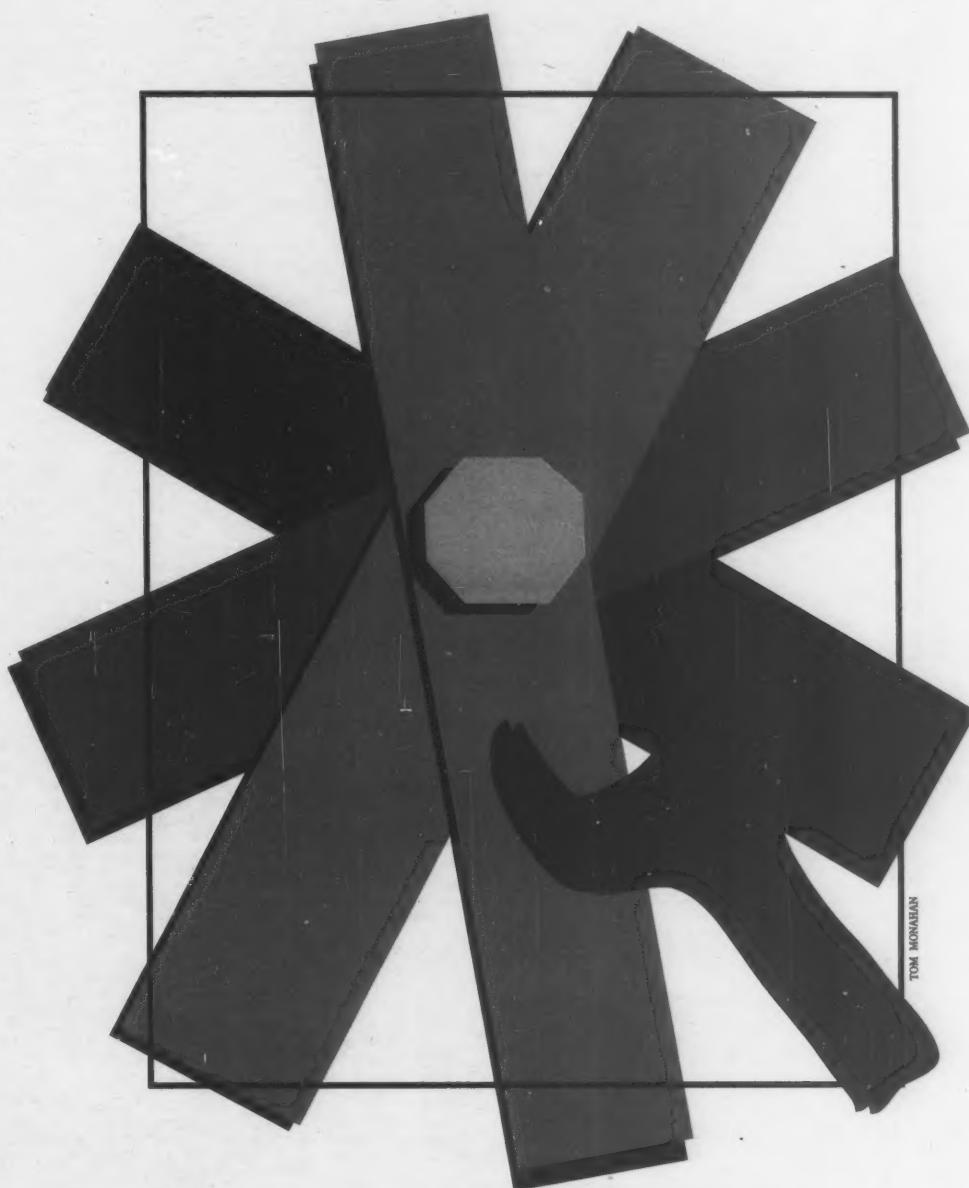
Who's in charge here?

BY MICHAEL TUCKER
FEATURES EDITOR

In these days of financial accountability, MIS managers are turning to third-party systems integrators to provide systems development — particularly for departmental and office automation projects that would otherwise syphon off development resources MIS is loath to lose.

In the process, MIS managers are redefining their function in corporations. By using systems integrators to free themselves from the more mundane integration tasks, MIS can deal with the larger issues of managing information. No longer merely technologists, MIS professionals are emerging as the key executives guiding information's role in business.

"I still want to do my own integration for the big boxes," explains one MIS officer who wished to remain anonymous, "but, let's face it, I haven't got the people or the money to do the little stuff. Let somebody else worry about the pip-squeak systems and their work group software."

The problem, though, is that for most MIS professionals, systems integration is new territory. Few data processing managers outside the federal government, in which third-party integrators are the norm, are experienced in the business of dealing with private systems developers.

Many MIS officers view the systems integrator as a threat to their power and position. Horror stories of domineering or incompetent integrators providing inflexible or inappropriate systems at great cost are distressingly common.

How, then, can the MIS officer most effectively deal with the systems integrator? Analysts, experts and those who've been through the process — and have the scars to prove it — agree their advice can be boiled down to

SYSTEMS INTEGRATORS

three maxims:
• Get involved as early as possible in the decision to use a systems integrator and in the selection of the integrator.
• Once an integrator is selected, become the manager. Understand that you must manage the integrator with all the skill and attention you would bring to in-house staff management. In an ideal situation, integrators would see their business as a service industry in which fortunes are made by keeping their customers happy.
• Deal with the implications of being a manager. It may be that assigning contracts, dealing with third-party systems integrators and going out of house for expertise is part of something larger. It may be part of the transformation of the MIS profession from one emphasizing the bits and bytes of technology to one emphasizing the management of technology as a strategic business weapon.

Traditionally, MIS has not had the best of relations with systems integrators, and as a rule, MIS did its own systems integration. Where the exception occurred, the use of an outside integrator was mandated over objections from the MIS manager.

"The initial model was total

> MIS managers have typically regarded integrators as enemies. Yet, by like token, in an age of shrinking budgets and growing work loads, MIS has begun to turn to systems integrators as a way out.

control," notes Jack Epstein, vice-president of integration at International Data Corp. (IDC), a market research firm in Framingham, Mass. "The integrator basically took over everything. In effect, he said, 'I'll provide total computing. I'll write the code. I'll configure the system. I may even take title to the computers.' The classic [example of a large systems integration company] was Electronic Data Systems Corp., which seems to have invented hardball."

As such, MIS managers have typically regarded integrators as enemies. Yet, by like token, in an age of shrinking budgets and growing work loads, MIS professionals have begun to turn to integrators as a way out. Underscoring the popularity and profitability of their busi-

ness, integrators are reported to be among the highest paid individuals in computing.

"Why use a systems integrator?" Epstein asks. "It's simple. Taking the headaches of pioneering isn't a lot of fun." MIS is busy, far too busy to deal with much of its own systems integration work, particularly in areas such as departmental systems.

"The applications backlog remains stubbornly at two to three years," Epstein explains. "Maintenance of software, meanwhile, will consume as much as 70% of an MIS operation's time and effort. More, sometimes. Given that, MIS just doesn't have the time for systems development."

And MIS may not be able to

bring on staff, even at the best prices, the expertise to develop systems in-house. The Washington, D.C.-based American Bankers Association (ABA) has increasingly turned to systems integrators for systems development on almost every level (see story, page 22).

Joe Ternavan, the ABA's director of MIS, is blunt about the

association's reasons for doing so. "Washington, D.C., is a very competitive market for programmers. For us, [the use of] systems integrators represents a recognition of the fact that the expertise we need to put these systems together simply may not be available," he explains.

Thus, it makes sense for MIS to allow somebody else to

SYSTEMS INTEGRATORS

sweat out the problems of systems development — someone with the resources and the focus to do so. It also makes sense for MIS to allow the person directly responsible to take the brunt of the blame should the integrated systems not meet expectations.

But how to harness the beast? How can MIS make cer-

tain that the integrator does not control the customer rather than the other way around?

It can be a delicate process, IDC program manager Karen Kugel notes, particularly because "the initial contact [between a systems integrator and a corporate customer] is usually not at the MIS level. Many of the vendors approach the chief

executive officer first."

MIS may find itself with a solution and a vendor imposed from above.

Preemptive action

MIS can deal with such a situation with a preemptive strike. The MIS officer can determine when and where a systems integrator is needed before top

management does so for him.

One DP professional at a large investment bank, who wishes to remain anonymous, describes his own experience. "We had to make a major systems investment. We could have handled it, but the problem was that the network we wanted required that Unix machines link to IBM machines and that those

both linked to PCs. We needed some communications protocol that assumed intelligent systems on both ends of the operation. We could have written it ourselves, sure, but not without pulling people away from the shop. So I went and scouted out a systems integrator who had experience in that sort of thing . . . before the boys upstairs got wind of the situation. When I had to bring the problem to the attention of the board, I already had a solution in hand."

Whether or not the use of an integrator is the initial idea of the MIS manager, the choice of which integrator to use should be on the MIS officer's mind. The sooner DP people are involved in the selection process, the better. If the choice is left to the chief executive, the contract may go to the integrator with the best sales force rather than the best technology, and MIS will find itself asked to deal with an installed system that does not meet the firm's needs.

MIS managers must plan ahead so they can tell the integrator exactly what they want. The Boston Systems Group, Inc. in Boston is a systems integrator that specializes in departmental-level integration. Its president, Theodore Klein, says, "Before an MIS officer even

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> There are several ways of judging the quality of an integrator. What is the vendor's technical expertise? What is the vendor's financial stability? How well does the vendor know your particular business?

begins to consider bringing in a systems integrator, he should have an architectural plan in place. By that, I mean that the MIS officer is like the mayor of a small city. Before you start assigning public buildings, you should have some degree of city planning.

Even with the help of MIS and its expertise, the selection process is not easy. Unfortunately, judging systems integrators is not a skill normally learned in daily MIS operations. Fortunately, though, the criteria for choosing an integrator are not very different from those for a hardware or software vendor.

The bottom line is, Will the company be able to stomach the person or product in the long run?

There are several ways of

judging the quality of an integrator. MIS should ask such questions as, What is the vendor's technical expertise? What is the vendor's financial stability? and, How well does the vendor know my particular business? IDC's Kugel claims that in a recent survey of integration customers, the single most common reason given for rejecting a potentional vendor was ignorance of the buyer's needs.

Closely tied to the integrator's familiarity with a company is the integrator's willingness to learn the customer's real needs and requirements. The issue is how far the vendor will go to learn not only the customer's business but also its corporate culture.

The state of Montana has used integrators and consultants extensively to help assemble the state's digital telecommunications network (see story, this page). Anthony Herbert, the state's director of telecommunications, says, "A real requirement is that you have a close, working relationship with these people. . . . We like companies that are willing to come up here and spend time with us. That may mean we will end up picking a smaller company over a big one. We want somebody who can deal with our needs rather than some huge outfit with a canned approach to things, though that's not to exclude larger companies that provide that hands-on approach," he says.

Once a vendor has been chosen, the next order of business is learning how to manage the relationship with the integrator. For instance, Herbert warns,

"When you hire someone, don't think it's not going to require any effort on your part. . . . You know the old joke about consultants being people who borrow your watch to tell you what time it is? Well, that doesn't happen if you manage the consultant well. You have to be willing to work with the vendor, to make certain that the work it does is the work you want."

ABA's Ternavan also emphasizes the managerial aspect. "Our plan is for our people to actually manage the project." he says. "Our [MIS staff] acts almost in the role of a consultant between users and vendors."

In fact, ABA's MIS is assuming so much of a management role that it is edging toward a new kind of function that moves away from development and more toward analysis. "Our intention is to be not so much programmers as systems analysts," Ternavan says. "It has been a change for us. It takes a little while for our people to get used to the idea."

In short, systems integrators force the MIS officer further down a road already being taken by the profession — away from the technical and toward the managerial.

The use of systems integrators in MIS operations is part of a much larger trend. In U.S. industry today, there is an increased emphasis on "outsourcing." This is the practice of not hiring permanent employees for even vital tasks but instead using third-party contractors. For at least some tasks, out-sourcing can prove to be more efficient and productive than in-house production.

MIS, too, can use and benefit from third-party contractors, specifically systems integrators. In some ways, it's a new relationship for both MIS and integrators, in that, for the first time, MIS is in control of the relationship, acting as a contractor rather than merely as an onlooker.

IDC's Epstein suggests that using integrators in this way actually increases MIS's power. "It is hard to fire a staff member," he notes. But "it is easy to terminate the contract of a supplier who isn't living up to expectations."

In the process, though, MIS officers must acquire a whole new set of skills. They must become contract managers as well as personnel managers. They must be able to judge companies as well as technologies. They must become as much like business executives as business technologists.

It is, of course, this transformation of the MIS director that has been long predicted by industry prognosticators and for which even a whole new term — the chief information officer, or CIO — has been invented.

Thus, the systems integrator becomes merely one class of supplier for a new kind of executive. It is almost a new profession, one that has far less to do with the everyday workings of an enterprise and more to do with strategy.

Some MIS professionals are already facing this peculiar transformation. "Make no mistake," Ternavan claims. "We're still 90% nuts and bolts. But, certainly, the migration is in that direction." ❖

Integrating Montana

▶ "WE DON'T USE the term 'system integrator' much here," says Anthony Herbert, director of telecommunications for the state of Montana. "We prefer 'consultant.' "

Call them what you will, but Herbert and his staff have effectively used consultants/integrators to help put together Montana's statewide digital communications network. In fact, he used Fairfax, Va.-based consultancy Federal Engineering, Inc. to assist in the design of the network and to help draw up the specifications of the system.

The advantages Herbert says he found in using consultants were lower cost and greater efficiency. "We use them because we don't retain the highest level of technical expertise on staff for obvious reasons of cost," he says. Instead, he can bring in expertise when he needs it and then "move it out the door" when he doesn't.

In addition, Herbert notes that third parties can be a source of cheap training. In an earlier project that involved voice communications on a limited level and used a different set of third-party integrators, his organization learned enough about the technology at hand to dispense with third parties in that area thereafter. "We learned from them to the degree that we do that kind of job in-house now," he says.

Partly for the training benefits, he suggests that anyone looking into systems integrators make certain that the vendor is an excellent communicator as well as a technical expert.

Herbert's advice to those involved in the process is that finding a third-party integrator should be grounded in realism. "I would say that people should always be realistic about what they can do and about what they can't." — MICHAEL TUCKER

ABA's in-house integration experiment makes sense

▶ ONE ORGANIZATION currently working with systems integrators on almost every level is the American Bankers Association (ABA), a trade and professional organization for the banking industry located in Washington, D.C.

The ABA is conducting a remarkable experiment in which its MIS staff is effectively becoming a kind of in-house systems analysis group assisting end users in defining their applications and managing the efforts of third-party contractors.

The ABA's director of MIS, Joe Ternavan, says that under the organization's new system, an application comes into being through a complicated process that begins with the end user.

"When an application is suggested, the users have to put together a task force, a business task force," he says. "It will be composed of the user, someone from MIS, someone from management and so on. That committee determines if the application makes sense from a business standpoint — is it

cost effective and so forth."

If the task force decides the application meets its criteria, the proposal moves to a preliminary committee representing the ABA membership. From there, it moves to a steering committee, which is responsible for organizing the development effort.

During the process, the MIS department operates as a kind of user advocate. In the beginning, it acts as a systems analysis group to help users define the sort of application they want. Then it manages the third-party integrators and makes certain that users get what they need. It makes for better and quicker development — and neatly dispenses with the ancient MIS/user antagonism.

Ternavan notes that all of this is still very much in the experimental stage.

"We're still looking at this," he says. "We haven't had any bad experiences with it. But that's not to say we won't someday."

Under the ABA's system, MIS does as little actual programming as possible. Wherever it can, it uses packaged software or code from systems integrators. This practice, however, has its problems. "I will say there is some apprehension about the fact that we don't have the source code to some of the applications," Ternavan claims. "But we've just got to believe that we can live with that fact."

To make this situation easier to live with, the ABA has adopted an innovative source code escrow program.

Under the terms of this program, key third-party software suppliers produce a copy of their source code and place it in escrow with a disinterested third party.

"We are involved with some contracts of this type," Ternavan explains. "If anything happens to the vendor company — say, if it goes bankrupt or if somebody buys it — then we have access to the source." — MICHAEL TUCKER

Hallelujah!

Tom Lulevitch

The technical workstation revival

BY HELEN PIKE

"**R**epeat after me! This is not a PC! This is a workstation!"

"Rev. Billy Bob" Folsom's voice raised in crescendo. His arms stretched outward and upward, gesturing emphatically to 150 or so somber-suited professionals in the Harborview Ballroom at the World Trade Center in Boston. "The corporate workstation is going to change the way you work and the way you measure work!"

Folsom's body shook. His golden-red beard twitched. His blues eyes glinted in the spotlight. His pitch got more feverish. "This *is* a workstation!"

Barry James Folsom, vice-president and general manager of Sun Microsystems, Inc.'s East Coast Division in Billerica, Mass., wasn't preaching to the unannointed nor to the newly converted. The one-time leader of Digital Equipment Corp.'s ill-fated Rainbow personal computer effort, Folsom was trying his hardest to impress upon reporters, Wall Street analysts, market researchers and third-party independent software representatives that Sun's newest hot box, embedded with an Intel Corp. 80386 microprocessor and capable of running Unix as well as IBM PC-DOS, is a workstation. Hallelujah!

Maybe.

Sun's announcement of the Sun386I is just the latest entry in an escalating effort by traditional workstation makers to gather MIS souls into their technical folds. Two years ago, when the market looked ripe for a shakeout, the workstation prophets got a new form of religion and instead launched a revival for their products in the office market. The born-again effort continues today. Why? Because of a nearly unstoppable downward migration of powerful technology and price from the Mount Sinai of technical computing. As the gods would have it, the trend also dovetails nicely with an upgrade movement in personal computer features and functions.

In between, vendors have discovered the MIS market as ready, nay, ideal for products that already saturate the

Pike is *Computerworld Focus*'s senior writer.

engineering and scientific communities. Workstation vendors are proselytizing to MIS and users with all the marketing commandments they know. It is this near-fanatical movement that prompted analyst Vicki Brown to redefine the workstation and related PC markets in order to chart them better.

"The crossover between PCs and workstations is causing a reshaping of the desktop market," observes Brown, who has followed the workstation transformation for three years at International Data Corp., a market research company in Framingham, Mass.

Where at one time there had been a simple division between technical and commercial computers, now Brown calls them both single-user systems. "You have to define the professional that is using them. If a technical professional buys a machine that gives him a faster response time so he can design more, then he's buying a workstation," she says.

If the use is primarily for graphics, she considers the machine a workstation, but if it is used mostly for text processing, then Brown considers it a PC.

Further and stricter refinements in Brown's definition include the following:
• **The distribution channel.** For workstations, it is the value-added resellers, OEMs and direct sales channels that sell the machines; for PCs, distribution is through retail outlets.
• **Operating systems.** Workstations primarily run on Unix, IBM VMS and Apollo Computer, Inc. Aegis; PCs use Microsoft Corp. MS-DOS, IBM OS/2 and the Apple Computer, Inc. Macintosh operating system.
• **Primary applications.** Workstations target technical applications, while PCs concentrate on commercial ones.
• **Millions of instructions per second (MIPS) and graphics.** According to Brown, MIPS "are a moving target over time. Workstations will always be two or three times [more advanced] than PCs."

With what amounts to missionary zeal, workstation companies will be knocking on MIS doors for the rest of this year and next with more crossover products that will blur the line between workstations and PCs, Brown predicts. So figuring out whether to buy a workstation or a PC depends on where the user places the greatest emphasis, she says. If the emphasis is price, the user tends to get a PC, but if it is performance, then he tends to get a workstation.

In 1986, when workstation makers tested the more traditional office market waters with their technical products, sales amounted to 1% of the total workstations sold. In 1987, that number inched up to 4%.

This year, Brown says she expects commercial sales to come to more than 10%. DEC, Apollo and Sun will be the significant players in this crossover market, she says. In fact, she predicts DEC will have a 70-30 sales ratio of technical workstation sales to commercial PC sales.

There is no denying that desktop machines — whether users call them workstations or personal computers — are attracting converts.

To Carol Zagorsky's way of thinking, "workstations absolutely belong in MIS," if one classifies machines such as IBM's Personal System/2 Model 60 as workstations for computer-aided software engineering to meet DP needs. "As hardware progresses, we become more used to a level of responsiveness, no matter what the tool.

"People have been calling them workstations," she says about the several hundred desktop computers used by programmers and analysts in the information systems and services department at New York-based New York Life Insurance Co., at which she is project manager in charge of standards and methodology.

"Users are looking to create independent environments for analysis and programming that help productivity and are not in contention with the mainframe," Zagorsky says. In cooperation with the applications division, her area is conducting interface testing between Index Technology Corp.'s Excelerator systems analysis workbench and Pansophic Systems, Inc.'s Telon application development system to ensure Cobol code compatibility.

New York Life "recognizes the need to give developers the best tools to produce quality software — that's why they're going to workstations.

"In my mind, Sun and Apollo [workstations] are geared toward engineering [and] aerospace individuals who need more real-time type of analysis," she adds. If Zagorsky's viewpoint is pervasive among MIS executives, then entering into the promised land of MIS is not going to be an easy pilgrimage for technical computer makers.

"'Workstation' is a funny word to begin with," muses William M. Kelly, director of market development and programs at Chelmsford, Mass.-based Apollo. "You have workstations, and you have PC workstations."

It is the rate of change between the two that is bringing MIS closer to its end users, Kelly says. "Right now, the users are putting pressure on MIS to get features."

However, what might be perceived as negative pressure is balanced by "a lot more involvement by MIS," Kelly says. Referring to a trend he has seen during the last 21 months, Kelly claims, "There are more MIS task forces to kick tires. MIS is pretty sophisticated. It doesn't need that much hand-holding. . . . After all, what is MIS if it's not numbers oriented?"

For those number crunchers, Apollo last month served up two low-end workstations. Partly to counter the Sun386I entry and partly to capitalize on the intersecting trend of price and performance, Apollo unveiled the Series 3500 Personal Workstation with a clock rate of 25 MHz at 4 MIPS and the Series 4500 Personal Super Workstation with 33 MHz at 7 MIPS. Both use Motorola, Inc.'s 68030 microprocessor.

Workstations bring processing power closer to the user and thereby increase user response time, Kelly explains. That same power also puts expert systems capabilities in the hands of the end user. "They can use AI to do decision support work," he adds.

According to Kelly, a workstation's compute power is a bonus for software developers who find it too cumbersome to run their applications on a mainframe and for MIS managers who don't want to see the mainframe weighed down by applications development.

Typically, an Apollo Domain 3000 workstation is a software engineering vehicle for customizing MIS applications. But the 3000 model is more often used as a network server, taking care of work off-loaded from the mainframe. It usually sits on a Domain network that can distribute applications to various CPUs, a setup that often enables Apollo to sell its workstations for programming use, Kelly says.

"Leading-edge firms will bring these systems [workstations] in as servers into an information network. Acceptance will pick up rapidly via the server installation syndrome," Kelly says, adding that networking and performance-oriented systems are becoming more important to a company's success.

MIS directors can expect to hear more from vendors about the business virtues workstations will afford them.

"Workstations are the cost of doing business. MIS has to ask, 'Will it do what we need it to get done?'" says Sandy Friedman, DEC's strategic marketing manager for workstations in Maynard, Mass.

"Workstations allow you to have a higher consistency across a broad organization to make more people more productive," Friedman adds. "Workstations give you the best of both worlds: high performance and user connectivity. . . . Efficiency benefits give you a 20% to 30% return annually on your computing."

Worth the sermon

Friedman acknowledges that workstations used to be too expensive for the typical MIS budget. But now, some configurations are available for less than $10,000, and they are, at least, worth an hour's sermon from a salesman.

"Workstations give application providers a better productivity platform to design better applications to bring mainframe applications down to PC and the individual," Friedman claims. He assures that "mainframes aren't going away, and they shouldn't. But they'll change to being large, multiprocessing machines with large memories."

Friedman's mainframe experience includes working with Control Data Corp. and IBM CPUs. Shortly before joining DEC a year-and-a-half ago, he worked at Analogic Corp. in Wakefield, Mass., helping to design a high-performance workstation around an array processor platform for imaging.

DEC is watching an interesting migration of its All-In-1 office automation package to its workstation base, Friedman says. The crossover is due to more multiple tasks being performed on the desk top, he explains, adding that 1989 will be a watershed year in workstation sales to the MIS market.

"Workstations offer more versatility than a PC," Friedman

> "Workstations allow you to have a higher consistency across a broad organization to make more people more productive. Workstations give you the best of both worlds: high performance and user connectivity."
>
> SANDY FRIEDMAN
> DIGITAL EQUIPMENT CORP.

says, listing user interface, high bandwidth between user and data, dedicated graphics to look at sophisticated numerical data in graphics form and multitasking to open windows as some of a workstation's advantages.

"A graphics interface really speaks to an organization's effectiveness," he claims. "Icons allow you to experiment. If there are more than 15 commands, it's too much."

According to Harold Elgie, a program developer-turned-consultant based in Fairfield, Iowa, the advent of graphics-oriented user interfaces is making MIS managers want workstations in their departments.

"Graphics make the interface to very complicated systems easy with fewer training requirements," Elgie says. "Operators are a very high turnover item. The training issue is constant. With an easy interface, MIS can get more people trained in less time and for less cost."

For program development, response time and machine utilization, nothing beats a workstation, claims Elgie, who classifies a workstation as any machine at the level of an Apple Macintosh II or above, including a box with an 80386-based microprocessor. And yet, "an [IBM Personal Computer XT] in the right environment is a workstation," he points out.

Meanwhile, back at the World Trade Center in Boston, Sun was trying to bridge what could arguably stand for the Old and New Testaments in computing. In a demonstration room not far from the revival-like press conference, Sun was running both Wordperfect Corp.'s Wordperfect on its Sun386I and Execucom Systems Corp.'s IFPS/Plus, an interactive financial planning system that was formerly a mainframe package.

Sun followed its Sun386I press conference with announcements deepening its links to Xerox Corp. Xerox already had signed for a license to buy Sun's Scalable Processor Architecture reduced instruction set computing microprocessor, but added to this pact by unveiling plans to enter into a five-year agreement with Sun for the purchase and/or manufacture of more than $200 million worth of Sun's workstations. Furthermore, Sun, Xerox and AT&T publicly announced a cross-licensing pact involving Xerox for the development of Open Look, a standard user interface based on design work originated at Xerox's Palo Alto Research Center.

The Xerox link enhances Sun's efforts in developing office applications, says Donna Novitsky, product line manager for Sunlink, Sun's network connection to IBM mainframes, DEC systems and others. "The workstation industry has to work on the ease-of-use [of its machines]. The typical MIS manager isn't a Unix hacker."

Novitsky, a former industrial engineer, says, "MIS isn't what MIS used to be — just analyzing production data. Workstations will help it make the gradual evolution to new technology [instead of] going for the revolution.

"We're not going to replace IBM 3090s," Novitsky says, referring to Sun's network plan to gradually integrate its workstations into the mainframe arena. "The next transition step is with windows . . . [to show MIS it can] build applications [on a workstation] that it can't build on the mainframe because [that machine] is overloaded." ◆

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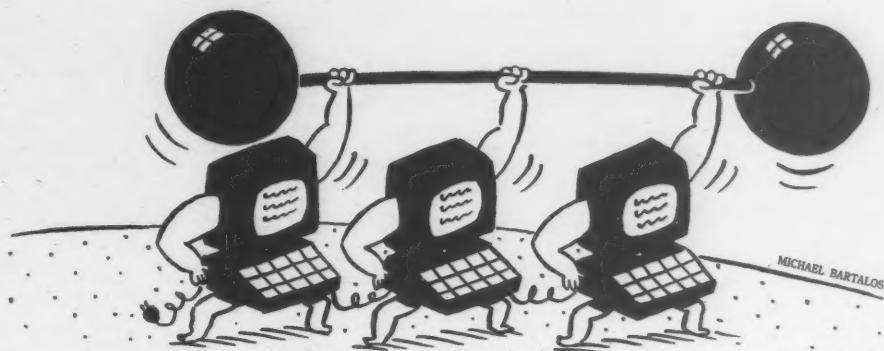
Strength in numbers

Groupware may revolutionize the way we work

BY SUSANNA OPPER

Groupware is the inevitable offshoot of local-area networks and a burgeoning network of electronic mail-based transport systems. It is nurtured by increased desktop power. And it thrives in the fertile soil of an everyday business reality — work is done by people in groups. But, like a small sprout, it is not yet obvious how groupware will grow or how much fruit it will bear.

Groupware is not one thing, but a cluster of categories and products. Patricia Seybold, president and chief executive officer of Patricia Seybold's Office Computing Group, Inc., a Boston, Mass.-based publishing and consulting firm, says groupware's "prerequisites are that people are linked electronically, that they are typically working on either the same task or different aspects of related projects and that the software might very well be proactive in its support of them."

Electronic mail, the first widespread computer communications tool to be pressed into service in the interests of group communication, falls short of being classified as full-fledged

Opper, president of Susanna Opper & Associates in New York, helps companies use computers to improve work group communications and productivity and works with developers on new concepts and products.

groupware. According to Bob Metcalfe, 3Com Corp. founder and senior vice-president of technology, "What the industry is trying to do in groupware is similar to what [technologists are] trying to do with energy. The goal is fusion — a sustained reaction that creates more energy than you put into it. What we've got is fission — something that generates power and a lot of unpleasant by-products. Electronic mail is like fission. In general, fusion hasn't yet been achieved with existing groupware products, although we're getting close," he says.

Doug Crow, assistant treasurer at Electronic Data Systems Corp. (EDS), says he feels the Dallas-based systems integrator has reached the positive energy point. EDS has been using The Coordinator, a cooperative program from Action Technologies, Inc. in Emeryville, Calif., since it first became available in 1985. "We've achieved a 20% to 35% reduction in memo

count and probably a 15% to 25% reduction in meetings," he observes.

Crow also applauds The Coordinator's ability to archive all the messages and then search for them. "Hit a few keys, and in 40 seconds I've searched everything, rather than going through file cabinets," he notes.

For the public accounting firm of Weinberg & Wilfong, headquartered in Rockville, Md., groupware isn't just a concept, it's a way of doing business. The 11-member firm also has a consulting branch, Management by Micro, Inc., that helps clients select and install appropriate accounting software. The whole venture is networked with Higgins, a cooperative software program from Conetic Systems, Inc. in San Leandro, Calif.

This system works well for Weinberg & Wilfong, but the approach rests on an important principle of groupware — everyone needs to use the same system. That is not a problem, according to Chuck Weinberg, a partner at the accounting firm. "We're the owners. We're the ones who dictate that everyone's going to use computers. When we set up a program like Higgins, it is destined to work. I send E-mail to everyone, and I expect an answer the same way," he states.

The structures that are used must be uniform as well. All clients' tax returns, for instance, are filed by last name; all outstanding returns are filed by due date. The firm is now assembling procedure manuals to describe this structure.

Prepare to meet face to face

Work group products, such as The Coordinator and Cambridge, Mass.-based Lotus Development Corp.'s prototype offering, code-named Notes, help users prepare for and manage face-to-face meetings. For the entire year that the Notes development team has been using the product, it has been keeping track of weekly meetings on the system. Eric Sall, Notes project director at Lotus, claims that on other projects, such well-intentioned documentation efforts fall by the wayside after a few weeks. "On Notes, we can post ideas, print an agenda, then write up minutes and action items and paste them into next week's agenda."

The Coordinator and Higgins serve similar business functions (with different program functionality), are used in the same kinds of work groups, have been on the market for about the same time (1985 and 1986, respectively) and have roughly the same installed base (in excess of 30,000 workstations). But there the similarity ends. The philosophy of each product differs radically and reflects the larger issue of how people choose to work.

The Coordinator is based on the idea that "there is a timeless structure that underlies what people do when they work with each other to produce future action — which is what business is really about. People make requests and promises with respect to that action. We know something about that structure, and we think it's possible to support people in doing the dance that they do with each other so that the dance is simpler and contains fewer irritating, nonsensical steps," says Chauncey Bell, Action Technologies' vice-president of strategic development.

Sheila Darnborough, an independent consultant, used The Coordinator for more than two years while working as an internal consultant on productivity at General Foods Corp.'s headquarters in White Plains, N.Y. She says The Coordinator's structure of conversations enabled her to practice what she preaches about preparing for meetings.

However, Darnborough also adds that she found The Coordinator's rigid structure frustrating. "I found it irritating if I was sending a message to someone that I had to go through all the protocols. Structurally, it was better to do it that way, but the price was short-term efficiency. Ultimately, I got used to it."

Higgins takes a "totally different approach than The Coordinator," says Howard Case, Conetic Systems' marketing vice-president. "With Higgins, we have attempted to produce a tool that people can use to operate their businesses better and improve their productivity. In no way have we tried to change the way they're doing business. We don't suggest the way to accomplish a particular project. Instead, we've put a tool in the workplace we think can increase communication of ideas and the amount of information available to people involved in a project. There's a fundamental difference in philosophy about how these things are approached."

This difference is not simply whether product A is better than product B. The dispute strikes at the essence of groupware — at how people actually work in groups. Groupware deals with far more dense and complicated issues than software has handled to date. Developers are serious about whether they should attempt to change how people work and whether their products will be accepted if they are clearly intended to alter the status quo of business practices.

The conventional wisdom is that people don't like to change the way they work. That's why Steve Dickson's advanced office systems group at regional Bell holding company U.S. West chose Higgins. "It more naturally matches the way people work rather than the way people should work. [The Coordinator] would be another end product, rather than a by-product of getting the job done. If you implemented it in a start-up, I could see it working. But with people who are firmly entrenched in a regulated, monolithic environment, it's very hard to make people sit down and think when they're sending a message."

Counters EDS's Crow, "If people are looking to make their same work easier, then The Coordinator isn't appropriate. But if they're looking to make their work activity better and more productive, then it can be very useful. Sometimes it's like being Alexander Graham Bell. It's a tough sell because people have to reorient their work habits."

One drawback to conversational groupware applications, such as computer conferencing, is that they frequently cannot handle complicated, rambling conversations. But if the purpose of a conference is to exchange short, direct items, on-line groups manage themselves well.

For example, Exxon Chemical Co.'s conferencing network, in operation for more than four years, uses Participate conferencing software from Eventures Limited in Allentown, Pa. One of the topics, entitled "Help Needed Fast," gives the systems' 100 members a method by which to get information about resources and quick solutions for pressing problems. There are more than 600 inquiries and responses to date. But even though Participate is useful to members, more compli-cated discussions about philosophical and management issues are hard to manage. Summarizing and directing a rambling conversation on an intense topic is not only time consuming, it's difficult.

The ability to handle such exchanges is where the ideas of professor Thomas Malone and his team at MIT will come in handy. Though still a project with no commercial application, Malone's "Information Lens" system applies artificial intelligence to the daily clutter of electronic mail. It is a prototype intelligent information sharing system that was designed to combine good user and organizational interfaces for supporting problem solving.

User's little helper

This system and several others being developed introduce the concept of the computer as helpmate. Another of these is Hewlett-Packard Co.'s New Wave — a task-oriented environment that includes, among other features, an agent, or personal assistant. For example, if you have a regular report to write each month, your computerized personal assistant will pull the pieces together — the sales forecasts from last month and this month's actual sales figures broken down by region and combined with the chief executive officer's text about divisional goals. This computer-generated draft then becomes an "object" to be manipulated in an object-oriented data base. It is not yet ready for end users, but New Wave offers developers a platform on which to build groupware applications.

The next step beyond the object orientation of New Wave is what Trumbull, Conn.-based start-up Coordination Technology, Inc.'s founder Anatol Holt describes as "physical" technology. This is not the abstract physical of physicists but rather the kind of physical we know as a work space, with objects we can lift and hold. "Coordination technology," Holt says, "proposes that the way to think of the computer and its network is as a 'place' where work is done. Your screen allows you to see into your work place — to see the work environment in three dimensions, not like paper. If something were broken, it might artificially rattle like a loose auto part — a 'virtuality' that acts physical. I can get in there and push things around and, as is true of any real work place, it has connections to other work places — via the corridor or telephone, by analogy."

Although Coordination Technology plans to introduce a product next year, it will be some time before Holt's 3-D computer work space is a reality.

It will also be many years before groupware is mature. Developers have a host of challenges to overcome and the user community has much to discover. The very platform on which much groupware will sit — IBM's OS/2 and its Presentation Manager — is several years away from mass adoption.

And the all-important issue of standards keeps the ultimate network nation in abeyance. While X.400 will likely be the store-and-forward standard, its implementation today is neither consistent nor universal.

Even without standards to challenge them, developers of products in this new area have much to learn. Developer Tony Kobine, president of FCMC, a Berkeley, Calif.-based software vendor that has developed a groupware product, cautions, "When you talk about groups of workers, you're talking essentially about power. One of the major differences between a group application and a personal productivity tool is the power structures between people. When you start to automate these things, you're delving deep into the psychology of why businesses work, why groups cooperate, why they don't cooperate, why the boss is the boss.

"If you attempt to automate a function in a way that doesn't pay attention to the apparent redistribution of power, even if it's only apparent, you may find people resisting the success of that implementation because they want to regain the power they think they've lost," he explains. "The way to address these issues is to recognize that they're real, because we're human beings. This must be dealt with in the way the products are designed, sold, supported and implemented."

What should businesses do about groupware now? That depends in part on departmental missions and organizational vision. Companies committed to being on the leading edge of technology should be

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>
> TONY KOBINE
> FCMC

looking for opportunities to shape groupware. They should be seeking strategic alliances with groupware developers and making themselves available to alpha or beta test products.

Other organizations interested in staying in the vanguard should be actively seeking ways to experiment with existing groupware products — from computer conferencing to shared document editing. MIS managers should seek out forward-looking departmental heads who have a real need for work group computing and will champion these new ways of working. Even firms that are not aggressive in new technologies should be installing an electronic mail system to familiarize knowledge workers with the space-and-time independent environment that is to come.

After all, observes Lotus's Sall, "People want to work together. They want to help other people. [Up until now] it's been too hard to share information. We had to make an effort — write a memo, call a meeting, make a phone call. Groupware products are starting to make sharing more automatic. That's one of the inherent benefits that groupware products bring to groups. Computers tend to be nonhuman, but when you start to communicate with people through computers, then it's the communication that matters and not the vehicle." ❖

Challenging the mid-range champ

BY STAN KOLODZIEJ

Minicomputers, the one-time undisputed champs of the mid-range, no longer enjoy an unchallenged position as the focal point of departmental data communications. The rise of local-area networks, dedicated microprocessor-based file servers and personal computers offering more MIPS are taking network market share from the mid-range machines.

Micro-to-mainframe links, which also cut into the minicomputer's business, are still a viable way of connecting personal computers to mainframes for uploading and downloading data into departments. In light of IBM's delays in getting peer-to-peer communications to market and the slow entry of the International Standards Organization's Open Systems Interconnect (OSI) product development in North America, micro-to-mainframe links have plenty of life left in them.

Some companies have given up on minicomputers altogether. Steve Gold, manager of systems development at Echlin, Inc., a Branford, Conn., manufacturer of automotive parts, has replaced an IBM 4300 series minicomputer with a Novell, Inc. LAN supporting nearly 60 users. Gold and his staff are in the final stages of recompiling existing Cobol programs into Information Builders, Inc.'s PC Focus

Kolodziej is *Computerworld Focus*'s senior editor.

fourth-generation language, which will run under Novell's Netware operating system.

It is a big switch, and one that Gold says is still controversial within Echlin.

"We've figured we've already saved about $1 million [by cutting back on MIS personnel and avoiding hardware and software upgrades] after installing the LAN and will probably save another $1 million a year from here on out," he claims. "We won over the hearts of the brass by showing that LANs offered big paybacks."

Armed with such figures, Gold says he hopes he can sell the LAN concept throughout the rest of the company.

Others are not so sure. For Mike Farrell, vice-president of systems at Automatic Business Centers, Inc., a payroll processing firm in Morristown, N.J., LANs offer little over the firm's IBM System/36 minicomputers.

"The LAN is really a poor man's operating system," Farrell says. "LANs duplicate the functions of the System/36 or 38 operating system with two exceptions. The program in the LAN is resident in the workstation, which is the cooperative

ROBERT PIZZI

Minis fight off LANs, file servers and powerful PCs

processing application that we assume will be on the IBM System/3X. The second exception is a true distributed data environment, where you share data from one PC to another PC, not from the file server. Generally, however, people are not sharing data from one PC to another. So in effect, a LAN is just an ersatz operating system."

Lura Zoldi, a partner in the construction consulting firm of Construction Information Management in Hamilton Square, N.J., says she thinks that minicomputers are not going to be bypassed in the near future.

"I'm not finding too much emphasis on connecting PCs through LANs and into mainframes," Zoldi says, "and certainly not in the construction business. Most of my clients are IBM minicomputer users and run IBM vertical software, and that's where minis are strong."

These comments only give a rough idea of how user views are divided on the amount of emphasis to place on PC-based LANs and minis within departments. Although minicomputers enjoy a long tradition of established

departmental software and communications service, there does seem to be growing research evidence that LANs are becoming a bigger factor in departmental networking.

Doug Gold, a communications analyst at International Data Corp. (IDC), a Framingham, Mass.-based research company, lists a few recent market developments that have enabled LANs to put pressure on minicomputers.

"The average local-area network is no longer a simple test bed in a remote department in the corporate backwater," he explains, pointing to the increases in PC computing power through more advanced processing chips. The advent of dedicated LAN server products (carrying up to 200M bytes of storage), increases in LAN intelligence and maturing LAN software are also keys to the advance of LANs into departmental computing.

Despite the march of LANs, a recent IDC study indicates certain trade-offs between minis and LANs in a number of criteria important to MIS.

"The actual differences in prices charged by the various minicomputer and LAN vendors we contacted are very subtle," Gold says. "And the differences in capacity between the LAN servers and minis are too subtle to make a strong argument for mini-based solutions."

With regard to one of the traditional shortcomings of LANs — networking software — Gold of IDC says the increased functionality of the emerging IBM OS/2 operating system and its promise of multitasking and multiuser functions make PC LAN products a more attractive departmental networking solution. He says minis make more sense to use in situations in which the machines are bundled with more specific application software offered by the mini vendor.

Stand and deliver

"Today's LAN servers primarily provide file and peripheral services, but under the OS/2 networking scheme, the server will also provide some degree of compute service," explains Jonathan Yarmis, an analyst at Gartner Group, Inc., a Stamford, Conn., research firm. "With more compute-intensive applications, LANs will start delivering on the promise of cooperative processing, which is where departmental computing is headed."

The area in which minis and LANs differ considerably, according to IDC's Gold, is in network maintenance and security and, perhaps even more importantly, in high-end connectivity. The mini can provide gateway and bridge links, especially using the Transmission Control Protocol/Internet Protocol as a strong multivendor networking option.

"Networks driven by minicomputers have a price/performance cost of about $3,000 per node, with micro-based LAN nodes costing about $1,000 each," he says. "But as minicomputer vendors get a good idea how to make their low-end minis into better server products, the price/performance costs will drop.

"A big advantage from mini vendors is in the installation and servicing of a network," IDC's Gold claims. "They've simply been doing it a lot longer than the dedicated LAN vendors."

He explains that PC LAN vendors have had to deal with the millstone of Microsoft Corp.'s MS-DOS as a single-user system; they are just starting to understand the issues of multiuser and multitasking.

Although LANs are changing the landscape of departmental computing and the position of minicomputers, there are other industry forces at work. Some strengthen the future of minis, but others may not be so kind.

Relational data base software, in tandem with fourth-generation languages, for example, might be giving some new life to minicomputers.

According to consultant Steve Wright, president of S. Wright and Associates in Sunnyvale, Calif., "The biggest market for relational data base management systems is still on minis, but it could be threatened," Wright says. "I know that a lot of [relational] DBMS vendors in the San Francisco Bay area are frightened of IBM's increasing connectivity between IBM Personal Computers and its larger systems. The strategy of relational DBMS vendors is to lock people into these minicomputer relational DBMS systems through 4GL tools."

It's a practice that Wright thinks will become more prevalent. He claims that "vendors don't want their customers writing software interfaces and other programs in standard languages such as Cobol and SQL because that would make it a lot easier for customers to unplug relational DBMS products and replace them with others."

Instead, Wright says, relational DBMS vendors are trying to make sure their customers use unstandardized fourth-generation language tools for building things such as user interfaces that are more proprietary and more difficult to replace with other such fourth-generation language programs.

On the hardware side, Wright says, reduced instruction set computing (RISC) workstations are becoming the nemesis of every minicomputer vendor.

"What Sun Microsystems, Inc. and other vendors of RISC-based workstations offer is raw horsepower with a generic operating system that allows people to compare what they're getting for their money," Wright says. "The more successful that companies like Sun are, the more that's going to come out of the hide of companies like DEC whose strength is in its installed bases and proprietary operating systems."

Central to departmental computing and minicomputers is the blurred issue of two-tiered and three-tiered computing, as represented by IBM and Digital Equipment Corp., respectively.

"IBM is clearly endorsing a two-tiered environment connecting mainframes and PCs, whereas a three-tiered environment has PCs connected to minicomputers which in turn are tied to mainframes," explains Greg Cline, a senior consultant at The Yankee Group in Boston. "Traditional MIS types tend to go with a two-tiered solution which is big in the banking and finance industries. Three-tiered solutions tend to be clustered in government and manufacturing."

Through sheer size and deep pockets, the government can almost sustain an industry on its own. The Forest Service

branch of the U.S. Department of Agriculture in Washington, D.C., for example, is in the final phase of a massive seven-year project to install 900 Data General Corp. minicomputers at offices across the U.S. The computers will be linked together by the X.25 communications protocol through GTE Telenet Communications Corp.'s public data network.

Steve Warner, the Forest Service's chief of telecommunications, says that his agency is committed to OSI standard networking protocols (as will all government agencies by 1991). Six years into the project have not affected the agency's attitude toward minicomputers, Warner says. He maintains that if the same contract were awarded today, he would still look at minicomputers "because we're looking at a corporate environment, and using unintegrated micros at the present time isn't the way to go."

According to Warner, in contrast to its previous mainframe computing environment, the agency is concentrating on installing a distributed computing environment. Using DG's Comprehensive Electronic Office as the crux of its software systems, Warner says the organization is moving toward integration of micros, yet feels LANs are still too cumbersome.

"The key to everything is networking, and distributed processing needs great networking," Warner explains. "Minicomputers still have that networking edge."

Where does IBM's System/36 and 38 minicomputer line fit into Big Blue's two-tiered scheme?

"IBM has a hell of a lot of mainframe iron lying around that they have to connect up to," IDC's Gold says. "IBM's public focus is on the low end. If the System/36 isn't a server in this strategy, then I don't know what it will do."

The server strategy probably also applies to IBM's long-awaited Application System/400 minicomputer line, which had been code-named Silverlake. Depending on a number of factors, such as programming capability and connectivity, most observers feel AS/400 will be the key to unlocking IBM's grand plan of fitting its mid-range systems into its two-tiered computing strategy.

"Clearly, Silverlake is based on the 38 architecture, which, unlike the [IBM] 9370's, is geared more toward a data base environment," explains Steve Josselyn, IDC program manager for user services. "I think some of the things that we see from that connectivity will be key in how people share data within the IBM environment.

"People are doing that now in the DEC environment, sharing back with the mainframe, but I think that all the connections and all the sharing of data is a little kludgy right now, so a lot of people are hoping that Silverlake will solve those problems," Josselyn explains.

Josselyn says he thinks that the AS/400 line will help bring to the fore some questions that are surfacing in the mid-range market.

"People will be asking if there's any

sense having a mini at that cost per MIPS in the middle," Josselyn says. "Is it really providing the processing power or is it just a file server?"

Users will continue weighing the benefits of minicomputers in relation to what else is available. A large part of that decision making will be based on administrative rather than technological issues, according to Greg Maris, an analyst at San Jose, Calif.-based Dataquest, Inc.

"The stylistic thing is not whether it's a mini or a micro but whether it's stand-alone or shared," Maris says. "Most of the management and communications issues center around sharing peripherals more so than having a shared central processor, because you can do the processing wherever you want in an organization."

Yet molding management issues can be confusing in an industry that has become complicated in the past few years. Given that, the hard core of systems technology can be perceived as a safer, more reliable foundation on which MIS can base its mid-range strategies. This thinking isn't lost on minicomputer vendors, which lately have had a tendency to push millions of instructions per second (MIPS) and price/performance over more compelling departmental management issues.

Explains the marketing manager of one vendor of low-end minicomputers: "Mainframe vendors will always try and sell a customer a mainframe if they can get away with it," he says. "IBM and DEC charge about $120,000 per MIPS, and if they can't get away with that, they will sell users a mini. A year ago it was $65,000 per MIPS for minis; now DEC's Calypso [6200 minicomputer] product line has pushed [its price] down to $40,000 to $55,000 per MIPS."

From there, the marketing manager explains, it is a plummet to the current average of $2,000 to $3,000 per MIPS offered by the high-end microcomputers from IBM, Compaq Computer Corp., Sun Microsystems and others.

Leaves DEC vulnerable

Consultant Wright agrees. "The hardware price/performance factor is becoming more important as software becomes less proprietary," he explains. "In a way, users are really buying MIPS, because software like [Oracle Corp.'s] Oracle and [Relational Technology, Inc.'s] Ingres will run on most processors. So it really leaves DEC and other minicomputer vendors vulnerable to people like Sun Microsystems who are coming on strong with workstations that basically have the same power of the minis for a fraction of the price."

Other observers foresee PC servers becoming dedicated-function servers handling such specific tasks as data bases and communications. Gartner Group's Yarmis says that while the minicomputer can do multiple functions better than a single PC, it will soon be possible to throw several PCs at a problem and still come out economically ahead in the game.

But price/performance is also a game that mini vendors can play hardball in, claims Herb Osher, director of product marketing at DG. Osher says that at least one developer of RISC-based processors has already promised 100-MIPS single processors on the market in a few years. "What that means is mega [processing] capacity at minicomputer prices," Osher says. "It's going to blow the pricing of the mid-range area wide open." ❖

> "People will be asking if there's any sense having a mini [with its high] cost per MIPS in the middle. Is it really providing the processing power or is it just a file server?"
>
> STEVE JOSSELYN
> INTERNATIONAL DATA CORP.

products

Vendor uses subtle means to promote AIX as standard

By MICHAEL TUCKER

What is the future of the departmental computer?

That question is hard to answer because no one is entirely sure what departmental computing is. For some, departmental computing means using departmental supercomputers. For others, it means office automation, pure and simple.

Yet the one thing that is clear is that departmental computing is being split between two camps — those who favor Unix-based systems and those who favor IBM's OS/2-based systems. More than one analyst has suggested that Unix will eventually perish as OS/2 becomes multiuser and multitasking and as it uses its links to IBM to dominate the scene.

That could still happen. But there may be surprises ahead. Consider Interactive Systems Corp., the Santa Monica, Calif.-based firm that is associated with IX, IBM's original excursion into the Unix market.

> Center serves as an information clearinghouse about Unix and OSF

Recently, Interactive Systems announced it will set up an Open Systems Technology Center in Boston to serve its customers in the Open Software Foundation (OSF), also based in the Boston area. IBM's subsequent Unix version, AIX, was highlighted by the OSF at the its coming out party in May.

Now Interactive Systems says that the newly created Technology Center will assist vendors and users "to comprehend the ramifications of the recent launch of OSF and will offer assistance in planning Unix strategies over the next several years." The center will be based at the company's existing Boston development center.

The exact relationship of the center to the OSF is somewhat nebulous. Interactive Systems spokesmen say that the center is in no official way linked to the OSF. Instead, they say, it is a reaction to the OSF, not a part of it. Essentially, according to Phil Shevrin, Interactive Systems

Tucker is Computerworld Focus's *features editor.*

vice-president of Boston Technical Operations, the center will be an information clearinghouse for people who "want to get on with their lives while they're waiting for the first code to come out of OSF. They need to know how to deal with the new situation."

The center could be significant. For one thing, last March, Interactive Systems announced an agreement under which Eastman Kodak Co. would acquire it. The company will become part of Kodak's new Software Systems Division, which already includes Yourdon, Inc., a software engineering consultancy, and Aquidneck Data Corp., a computer software and systems engineering concern that specializes in sales to the federal government. In short, AIX is now part of what looks a lot like a carefully designed construct of distinct but interlocking technological and marketing strengths — all backed by Kodak's deep pockets and most dedicated to the promotion of OSF- (read AIX-) related technologies.

At the very least, this means that Interactive Systems will be able to use its perceived special relationship with OSF members to promote itself at the expense of rival Unix vendors, particularly those at the low end. At the very most, it could mean that as more vendors become involved, the OSF effort is taking on a life of its own.

What has all this to do with departmental computing?

Simply this: The OSF founders all have at least some tie with the mini makers that, before the advent of micros, dominated office automation and departmental computing. They still control that niche, particularly because their numbers include DEC and IBM.

Given that and the presence of vendors like Interactive Systems, some OSF-related version of Unix (again, read AIX) could easily emerge as the dominant departmental Unix or even as the dominant departmental operating system. Perhaps it could not help becoming such.

The question now is: Does the OSF want that to happen? And, more importantly, could the group prevent it if they didn't want that to happen?

Scanner pushes limits

There is a boom market right now in scanners, devices that translate the printed page into machine-readable characters.

But scanners have their drawbacks. They have traditionally not dealt well with printed material that comes in unusual shapes or fonts. Also, sometimes they do not fit into the personal computer-oriented world of departmental computing.

Kurzweil Computer Products, Inc. has introduced a scanner that may help overcome some of these problems. The Discover 7320 Model 30 scanner is a PC-based system that can automatically recognize multiple-column documents and several thousand different fonts and type styles. According to Kurzweil, the product "reads" data using intelligent character recognition, an architecture based

on artificial intelligence techniques. Among other things, it can scan printed material in seven languages, including Spanish and Dutch.

The vendor said the scanner can deal with such diverse printed matter as reports, proposals, magazines,

Kurzweil's *Discover 7320*

typed letters, charts, drawings and so on. It can scan documents produced by typesetters, laser printers, near-letter-quality dot matrix printers and facsimile machines.

The Model 30 converts the scanned data into ASCII or IBM

Summit peek

Brian Jeffery

IBM decided to call it the Application System/400. My own preference for a name would have been Summitlake for the simple reason that the AS/400 is the first implementation of IBM's much-rumored Summit mainframe architecture for the 1990s.

This fact in itself is not surprising. What is a little surprising, though, is the extent to which IBM has stated its intentions in public.

Here's one to start with. In IBM's AS/400 announcement, the company refers off-handedly to the AS/400 processors as having "a 32-bit data path and 48-bit addressing that has the ability to provide direct access to 281 trillion bytes of storage [that is, 281 terabytes]. It is implemented with a software and hardware architecture that can accommo-

date up to 64-bit addressing. The architecture accommodates the needs of advanced applications such as voice, image and artificial intelligence."

This disclosure is rather interesting in that to my knowledge, this is the first time IBM has publicly described the original Future Systems architecture.

A systems legacy

Future Systems was an advanced research and development project run by IBM in the early 1970s that later resulted in the System/38. Future Systems created the integral relational data base, object-oriented architecture and single-level storage, capabilities that later appeared in the System/38 and have now been carried over to the AS/400.

IBM rolls out additions to its PS/2 line

IBM recently unveiled a family of Personal System/2s — the Model 70s — and an upgrade to its PS/2 Model 50, known as the Model 50 Z.

The Model 70s are the long-awaited plug to fill the hole between the PS/2 Model 60 and 80 lines. There are three new Model 70 machines — the 70-A21, 70-121 and 70-E61. All have in common a 25-MHz Intel Corp. 80386 processor, high-speed memory and memory cache. IBM said the Model 70s will provide up to 1½ times the speed of the Model 80.

Individually, the three 70s differ somewhat. The 70-A21, at $11,295, comes with an Intel 82385 memory cache controller, 64K bytes of cache memory (operating at zero-wait state), 2M bytes of random-access memory expandable to 8M bytes and a 120M-byte disk drive.

The 70-121, which costs $7,995, has 2M bytes of RAM and 120M bytes of fixed disk space. The $5,995 Model 70-E61 provides 1M-byte of RAM and a 60M-byte disk.

The Model 50 Z can be considered a hot-rod version of the original 50. "Z" stands for zero-wait state. With a 10-MHz Intel 80286 processor, the Model 50 Z offers up to 35% of the performance of the older Model 50s.

The Model 50 Z comes with 1M byte of RAM, 128K bytes of read-only memory, a 1.44M-byte 3½-in. diskette drive and three 16-bit expansion slots. It comes in two versions, the 50-031, priced at $3,995, which contains a 30M-byte fixed disk, and the 50-061, priced at $4,595, which comes with a 60M-byte fixed disk.

Significant speed

The significance of these products is in their speed. Without introducing processors or even radically new hardware, they still manage to vastly outperform what came before.

For years now, designers have suffered from a kind of processor frenzy. They rush from 8- to 16- to 32-bit processors without really having the time to complete the design of the system that goes in around them.

With these machines, IBM proves that much of the power of the Intel chips has been wasted. Designers have not even begun to explore the power of the 286 processor, much less that of the 386. By speeding up the 286, the 50 Z shows there is much that can still be done with 16-bit processors. — MICHAEL TUCKER

Circle Reader Service Number 131

Unysis Corp. has introduced a group of Unix-based departmental systems. Called the U 6000 series, the Intel Corp. 80386-based machines reportedly have the power to combine Unix and Microsoft Corp. MS-DOS environments.

In the U 6000/50 model, which is the entry-level and, thus far, the only available version of the line, up to 32 users can simultaneously access the system. By toggling back and forth, users are able to alternate between the two operating systems.

The U 6000 group gains the capacity to run MS-DOS under Unix via Merge 386 from Locus Computing Corp., one of the few firms to make strides in integrating MS-DOS and Unix.

A base configuration of the U 6000/50 costs $24,500 and includes 4M bytes of main memory, 170M bytes of fixed-disk memory, a 150M-byte ¼-in. cartridge tape drive and three RS-232 asynchronous ports. It can support up to 64M bytes of memory as well as up to 2.3G bytes of fixed disk space. In main memory, 16M bytes are available for applications and 48M bytes act as a high-performance random-access memory disk.

The U 6000/50 is one of the machines by which minicomputer manufacturers are using 386-based platforms to adapt to a departmental market they once controlled so completely. It is a departmental machine that admits the reality of the personal computer.

The product assumes it will provide PC-like services to its users or act as a hub-service provider to PCs that will link to it via Ethernet or RS-232 ports.

Unisys, P.O. Box 500, Blue Bell, Pa. 19424.

Circle Reader Service Number 132

Increasingly, MIS officers are discovering that departmental systems are only effective if they take pressure off the MIS department. This requirement means that applications and hardware must be well documented so that end users can do much of their own management.

But computer documentation is notorious for being unintelligible to novice users. While there are competent professional writers in the documentation field who can present the information clearly and concisely, these veterans are expensive. Many developers simply cannot afford to have such people on staff full time.

Merrill & Bryan Enterprises, Inc. has set out to address the problems of writing documentation. As an adjunct to its management consulting practice, Merrill & Bryan offer a **user manual and documentation program** in which a developer works directly with a documentation specialist. The product gets a manual, which the developer could ill afford otherwise, and users get readable documentation.

Prices vary according to the contract.

Merrill & Bryan Enterprises, P.O. Box 3835, San Diego, Calif. 92103.

Circle Reader Service Number 133

One of the chief requirements of work group computing is effective communications between members of the work group. To date, this communications effort has been based on the telephone or some form of videotex or electronic mail.

However, a growing alternative in this market is the photo phone, a device that combines some degree of televised image with the telephone.

Datapoint Corp., for instance, has recently released an upgrade of its Multimedia Information Network Exchange, or MINX, product line. A full-motion desktop video communica-

Datapoint's *MVC II*

tions system, the latest MINX version, is the **MINX Video Codec II** (MVC II). According to the vendor, a codec provides a long-distance communications gateway for transmitting and receiving video and audio signals over medium- to high-speed digital telephone lines.

The attempt to blend the television and the telephone has been an ongoing industry saga for years. The biggest problem holding back the technology is that standard phone lines simply lack the bandwidth for full-motion video. But that problem could vanish as more fiber-optic lines come into service.

Datapoint's MVC II costs $23,950.

Datapoint, 9725 Datapoint Drive, San Antonio, Texas 78284.

Circle Reader Service Number 134

Support Station Software has unveiled a product for Microsoft Corp. MS-DOS machines that allows novice users to group related files under general topic headings. However, the product, **Filebank**, is not exactly a data base. Nor is it exactly an graphically oriented interface. Rather, it is a combination of the two.

With the program, the user reportedly can group important records together according to common topics. These topics, called cabinets, then exist as data objects that can be displayed and manipulated on-screen. (In fact, the icons representing cabinets look like file cabinets.) Each cabinet has sub-groupings, called drawers. Material within the files (documents) can be manipulated via a variety of utilities within Filebank.

The vendor said that Filebank is not the sort of program that will appeal to the resident power-er-using MS-DOS guru for whom the real thrill of computing is getting into the nuts and bolts of the file structure. But it will appeal to nontechnical users for whom the value of computing increases in exact proportion to the rate at which it can be integrated into the day-to-day work cycle.

Filebank is priced at $149.

Support Station Software, P.O. Box 8282, Aspen, Colo. 81612.

Circle Reader Service Number 135

Aug. 7-13

T1 Networking. San Francisco, Aug. 9-10 — Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

Introduction to ISDN: Concepts, Technology and Applications. San Francisco, Aug. 11-21 — Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

Computer and Communications Security Seminar Series. San Francisco, Aug. 11-12 — Contact: Federal Engineering, Inc., 2722 Merrilee Drive, Fairfax, Va. 22031. Also being held Aug. 25-26 in Washington, D.C.

Aug. 14-20

1988 Systems Software Conference. Nashville, Aug.

14-19 — Contact: Meryl Schoenbaum, Systems Products Division, Computer Associates International, Inc., 711 Stewart Ave., Garden City, N.Y. 11530.

Data Communications I: Basic Concepts. Boston, Aug. 15-17 — Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

Software Futures. Boston, Aug. 16-17 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Telecommunications Management. New York, Aug. 17-19 — Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521. Also being held Sept. 7-9 in Chicago.

Relational Data Bases: The Integration of Expert Systems Technology. New York, Aug. 17-19 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810. Also be-

ing held Aug. 22-24 in Chicago.

Aug. 21-27

Data Administration and Data Resource Development. Boston, Aug. 24-26 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Aug. 28-Sept. 3

The 5th Annual Information Center Conference & Exposition. Boston, Aug. 28-Sept. 1 — Contact: Weingarten Publications, Inc., 38 Chauncy St., Boston, Mass. 02111.

Midcon/88 Electronic Show and Convention. Dallas, Aug. 30-Sept. 1 — Contact: Midcon, P.O. Box 92275, Los Angeles, Calif. 90009.

Sept. 4-10

T1 Networking. New York, Sept. 7-9 — Contact: Systems

Technology Forum, 10201 Lee Highway, #150, Fairfax, Va. 22030. Also being held Oct. 3-5 in Chicago, Oct. 24-26 in Anaheim, Calif. and Oct. 31-Nov. 2 in Washington, D.C.

Network Design. New York, Sept. 7-9 — Contact: Systems Technology Forum, 10201 Lee Highway, #150, Fairfax, Va. 22030. Also being held Oct. 3-5 in San Francisco.

X.25 and Packet Switching Networks. Washington, D.C., Sept. 7-9 — Contact: Systems Technology Forum, 10201 Lee Highway, #150, Fairfax, Va. 22030. Also being held Nov. 7-9 in New York and Dec. 12-14 in San Francisco.

Sept. 11-17

The Computer-Aided Software Engineering Symposium. Washington, D.C., Sept. 12-14 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810. Also being held Oct. 12-14 in Chicago.

PRODUCTS

Blue Beat

Future Systems, though, was originally designed as a 64-bit architecture expandable to 96 bits, and the 281-terabyte single-level storage support is also about right for the capabilities of the Future System.

IBM is now talking about AS/400 architecture evolving from 48 bits to 64 bits. This is also the progression that the company has been talking about for its 370: MVS 31-bit to IBM's much-rumored "Planet" 48-bit system guested under VM to 64-bit sometime in 1995 to 1996.

At this time, the separate components of 370 MVS, VM and OS/400 will have merged into a single multisystems operating environment. The result is something very similar to Future Systems crossbred with 370 architecture. During the second half of the 1990s, this is what IBM says it sees its large mainframes looking like.

For the more technically oriented, there is the IBM CMOS technology that the AS/400 employs in its logic chips and the combination of gate-array and standard cell circuitry on the

same CMOS chip.

What can be seen in this technology is a preliminary cut at Summit hardware architecture. CMOS technology is perhaps best known for its reduced power consumption. It also generates less heat and thus permits chips to be more densely packaged.

CMOS, more than any other technology, offers IBM the realistic chance of overcoming the constraints on large 370 processor architecture posed by heat dissipation. The AS/400 CMOS technology will be used in supercooled form and with some transitional components in the next generation of IBM 3090 and beyond mainframes.

Reaching the top

The crossover point for the AS/400 should be in the 1991 to 1992 time frame, when the AS/400 line should be extended to include a total of nine models. The high end of the line, scheduled for introduction in 1991 with shipment in 1992, will be a full-function CMOS machine with an integrated hybrid of 370 VM and AS/400 architecture, representing not only a low-end uniprocessor version of the Summit but also the high end of the

AS/400 line.

Probably the best way of describing this process of transition to Summit is in IBM's offhand statement of the role of OS/400 in the AS/400 system. The OS/400 "directs the flow of traffic in the computer and manipulates the data base."

Now imagine a large mainframe complex incorporating radically more powerful hardware in which VM directs the flow of traffic and MVS/ESA manipulates the data base. In practice, VM, MVS/ESA and OS/400 converge to the point of integration and represent merely the large systems component of a broader enterprisewide environment.

Alternatively, imagine a fully 370-compatible version of the AS/400 about the size of IBM's 3090 Model 600E. Either would be a reasonable approximation of Summit.

Around 1995 to 1996, IBM should be back to something very like the original Future Systems concept — and only a mere 20 years later.

Jeffery is managing director of the International Technology Group, a management consulting and market research firm in Los Altos, Calif.

Scanner

Document Content Architecture (DCA) format. DCA is compatible with such word processors as Wordperfect Corp.'s Wordperfect and Microsoft Corp.'s Microsoft Word.

Because the Model 30 is a scanner and board for a PC and

includes some proprietary software, it can easily become part of an existing investment in PC equipment.

In effect, the Kurzweil machine can give just about any department, even a department of one person, scanning capability.

The Model 30 is priced at $13,950. It includes the proprietary intelligent character recognition software, a proprietary

16-MHz Motorola, Inc. 68020-based coprocessor board with 4M bytes of random-access memory, a scanner interface and a desktop scanner. The board fits into an expansion slot in a IBM Personal Computer XT, AT or compatible.

Kurzweil Computer Products, 185 Albany St., Cambridge, Mass. 02139.

Circle Reader Service Number 136

log off

Strange bedfellows
Planned PCs at commercial DEC VAX sites

5% Zenith 2% AT&T

50% IBM

14% Apple

20% Other*

VAX

* Includes Epson, AST Research, Xerox and Wyse machines

INFORMATION BASED ON A 1988
COMPUTER INTELLIGENCE SURVEY OF 2,000
COMMERCIAL VAX SITES.

GRAPHIC BY BRUCE SANDERS

OF INTEREST

"**M**ore and more, MIS is being asked to make money, to help find ways to improve time to market and product differentiation, to not be just an accounting system."

PAT MULLEN
DIGITAL EQUIPMENT CORP.

next issue

As summer winds down, it's time to get back to work and tackle communications problems that can hamper systems success. September's *Computerworld Focus* will highlight communications solutions so you can discern the helpful from the hype. We'll show how MIS can best achieve systems integration in a multivendor environment. Our report on the role industry standards committees play will examine who really benefits from their efforts — users or vendors. In addition, network management and controlling backdoor LANs will be covered. Don't miss our Special Section on TCP/IP. Is it a migration path to OSI or only a short-term solution?

A blast from the past
Michael D. Millikin

Departmental computing was originally part of the movement to decentralize and distribute computing throughout an organization. As originally envisioned, departmental computing — "office automation" — would let the folks in a particular area get on with their jobs without making them queue up for access to the host (or to the data processing shop). It was a solution that made sense for both DP and users.

Such an approach might have continued had personal computers never appeared. Suddenly, however, the PC became a phenomenon, and departmental computing increasingly became entwined with PC-based end-user computing.

Now, we are moving to a new architectural platform — distributed network computing, which provides a transparent window onto the entire architecture for each user. From my desk top, I have transparent access to data or computational tasks across a multivendor network of mainframes, minis and PCs.

THE INSIDER

The benefit of distributed network computing is that it offers a technology platform for enhanced applications that better monitor the condition of the business, that increase effectiveness, that support cooperative work among distributed groups and that exploit internetworking and messaging. The downside is that administering such an architecture is incredibly difficult.

Multivendor connectivity is already an important product in any vendor's offering. PC connectivity is also increasingly coming to the fore both in PC-only local-area networks and in PC-mini LANs. Ultimately, the entire architecture will be operating on a peer-level network.

Suddenly, applications aren't the only requirement for a departmental solution: Vendors must provide a solution for the growing administrative snarl a peer network architecture creates.

The quality of a system's network management capabilities thus will become an integral factor in a vendor's success. Because not every vendor can claim management leadership of an architecture, most are going to have to make sure that their systems accommodate the dominant management schemes. In short, that means support for IBM's Netview or for the developing International Standards Organization's Open Systems Interconnect (OSI) set of network management protocols. A few vendors, like Hewlett-Packard, will do both. Others, like DEC, will emphasize their way — the OSI way.

The result of this support of a common management scheme must be to allow centralized management of a sprawling, complex network. Management features must go well beyond simple fault management into revision and configuration control, accounting, performance and so on.

It's back to the future, but with a twist: We are centralizing administration, while still promoting the decentralization of computing power.

Millikin is vice-president and senior analyst with Patricia Seybold's Office Computing Group in Boston.

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TO MANAGE CICS: CICS MANAGER.

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